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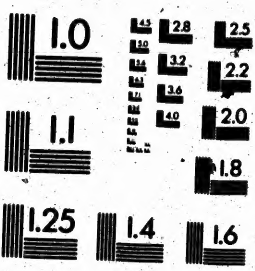

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REPORT

ON THE

NOVA-SCOTIA RAILWAY,

ITS

PRESENT CONDITION AND PROBABLE COST,

BY

JAMES LAURIE,

CIVIL ENGINEER.

FEBRUARY 5th, 1858.

[illegible] 5th, 1858.

To the Honorable Charles Tupper, Provincial Secretary.

Sir,—

I have the honor to submit the following Report on the Nova-Scotia Railway, made in pursuance of my appointment in the letter annexed, to examine into its condition, cost, and management.

I have the honor to be, Sir,
Your obedient servant,
JAMES LAURIE,
Civil Engineer.

Provincial Secretary's Office, Halifax, 28*th September*, 1857.

Sir,—

In the last Session of the Provincial Legislature, a Resolution was passed, authorizing the Lieutenant-Governor "to employ competent persons to examine the "Books and Accounts in the several Public Departments, including the Accounts and "Contracts touching all Public Works and their condition, and to report thereon; and "also upon the system on which the Books and Accounts are kept, and on any changes "in the system of receiving monies and keeping the Accounts, that may be beneficial "for the public service."

Under that Resolution, a Minute of the Executive Council dated 16th June last, authorized the employment of a competent Engineer, unconnected with the Railway "works, for the purpose of affording the fullest and most authentic information to the "public with reference to the Railway, the amount of money already expended, the "sum required to complete the Line to Windsor and Truro, the cost per mile, and "detailed statements of the Accounts, with the particular services for which the money "has been expended."

The Government having selected you to carry into effect the objects specified in the Legislative Resolution and the Minute of Council, I have communicated with the Chairman of the Railway Board, and requested him to put you in possession of all documents that may be required to enable you to fulfil this duty, and to afford you every facility in his power in making the investigations with which you have been charged. It is particularly desired by the Government that you should, after careful examination, report fully upon the present state of the works, embracing every section of the proposed line, the average cost per mile, their value and character, with a detailed statement of the expenditure, classifying each account under its proper heading, and furnishing as accurate an Estimate as possible of the amount required, in addition to the present outlay, to complete the Road to Windsor and Truro, with a fair average equipment.

Your report will also be expected to notice any defect that may come under your observation, and, in fact, to present such a statement of the operations, that the Legislature and the public may be enabled fully to understand the whole subject, and resolve any doubts as to the permanence or stability of the works.

You are further requested to suggest any changes or improvements in the mode of keeping the Accounts and Books of the Railway Board, which you may deem advisable.

Should any assistance be desired in carrying out the objects thus detailed, you will be good enough to communicate to me your wishes, which will meet with prompt attention.

I have the honor to be, Sir,
Your obedient servant,
(Signed) CHARLES TUPPER.

JAMES LAURIE, Esq., Civil Engineer.

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REPORT.

THE Railway works at present under construction in Nova Scotia, and to which the foregoing Letter and Minute of Council refer, embrace the Trunk or "Main line," which commences at Halifax and runs north-easterly to Truro at the head of the Basin of Mines, a distance of $61\frac{8}{10}$ miles; and the Windsor branch, which leaves the Main line at a point $13\frac{1}{10}$ miles from Halifax, now called the Junction, and thence runs westerly to Windsor, on the Avon River, a distance of $31\frac{8}{10}$ miles.

The construction of these roads, as public Provincial works, was authorised by Act passed March 31st, 1854, and by a subsequent Act of the same session, provision was made for obtaining the necessary funds for building them, by authorising the contracting of a loan by the issue of debentures on the pledge of the revenues of the Province,—the said debentures to bear interest at six per cent. per annum, and be redeemable in twenty years.

The first of these Acts provides for the appointment of a Board of Commissioners and a Chief Engineer by the Governor in Council, and confers upon them all the requisite powers to carry on and complete the works.

The Commissioners are authorised to draw on the Receiver General for all monies that may be required for the purposes of the Act, but are restricted not to expend a larger sum, nor incur liabilities to a larger extent in any one year, than £200,000.

The work was commenced on the Main line June 13th, 1854, and on the Windsor branch in July, 1855, and has been prosecuted without interruption up to the present time.

In February, 1855, the first four mil[illegible]om Halifax was opened for travel. On July 27th, 1855, the road was opened to [illegible]edford, 8 miles from Halifax. In January, 1857, an additional 14½ miles, extending to Schultz's or Grand Lake station, was brought into use; and on the 3rd instant, 9 miles, extending to the Truro road crossing, was opened;—making 31½ miles of the Main line completed and now in operation.

The Windsor branch was passed over by a locomotive and car on the 30th December last, but as part of the grading and ballasting remains to be done, and the turn-tables and water stations are yet in an unfinished state, it has been deemed advisable to delay opening it to the public until these works are further advanced.

On the remaining thirty miles of the Main line to Truro, about two-thirds of the work is done, and there is nothing in the character of that remaining to be accomplished to prevent the entire road being opened for travel by the first of November next.

CHARACTERISTICS OF THE ROAD.

For the first 25 miles, from Halifax, the Main line passes through that range or belt of rocky and broken land which runs along the Atlantic shores of Nova Scotia. It is characterized by a rugged and uneven surface, full of rocky gorges and deep bogs, generally unsuited for the purposes of agriculture, while the timber with which it is covered is of stinted growth and of little value. Beyond this, or soon after passing Grand Lake, the character of the country materially improves,—the rocks disappear and the soil becomes more favorable. This improvement continues until we reach Truro, where the country presents a wide area of rich soil adapted to the wants of the husbandman.

The Windsor branch leaves the Main line in the midst of the barren track above referred to, and proceeding westerly somewhat in the range of the formation, does not emerge from it until within 7 or 8 miles of Windsor, where it meets the richer soil and cultivated country which lies along the southern shores of the Bay of Fundy and Basin of Mines.

These unfavorable features of the country, traversed on the first part of the line, have rendered it necessary to adopt gradients and curvatures of a somewhat objectionable character—although not more so than occurs on many other roads designed as general thoroughfares for trade and travel.

The maximum grade on the Main line in going north, occurs in ascending from Bedford station to Lily Lake, and is at the rate of $64\frac{8}{10}$ feet per mile for 1½ miles in length. In coming south, the maximum is 48 feet per mile, immediately on leaving Truro, and extends for a distance of 1 mile 41 chains. The maximum grade on the Windsor branch, going west, is 71½ feet per mile for 19 chains near Long Lake ; and coming east, $64\frac{8}{10}$ feet per mile for 62 chains, about one mile west of the Big Bog Brook viaduct.

The minimum radius of curvature on the Main line is 792 feet, and on the Windsor branch, 1320 feet.

The aggregate amount of curvature on the Main line is 2536 degrees, or an average of 41 degrees per mile. On the Windsor branch the aggregate amount of curvature is 1635 degrees, or an average of 51½ degrees per mile.

The whole amount of the ascents on the Main line in proceeding from Halifax to Truro is 605.4 feet, and the amount of the descents 558.3 feet. On the Windsor branch, the whole amount of the ascents is 461.9 feet, and of the descents 565.7 feet. Including the portion of the Main line between Halifax and the junction, the amount of the ascents from Halifax to Windsor is 631.4 feet, and the amount of the descents 619.6 feet.

The summit or highest point on the Main line is six miles from Truro, and is elevated $180\frac{4}{10}$ feet above the level of tidewater. On the Windsor branch, the summit is at Mount Uniacke station, 13 miles from the junction, and is elevated 518.7 feet above tide.

The whole length of straight line on the Main road is 39 miles, and of curved line $22\frac{2}{10}$ miles. On the Windsor branch, there is of straight line $18\frac{4}{10}$ miles, and of curved line 13½ miles.

Tables No. 1 and 2 in the Appendix exhibit the details relative to the grades,—their length and inclination, the ascents and descents, and elevation above tide. Tables No. 3 and 4 exhibit the details relative to the curvatures, the length of the radius and of the curve on each portion of the road, with the amount of curvature in degrees ; also, the length of straight and curved line, with the aggregates of each.

The width of the road bed is 22 feet in excavations, and from 16 to 18 feet on embankments, at the formation level, which is 18 inches below the base of the rail.

The side slopes of earth excavations, on the first 39½ miles of the Main line and on the whole of the Windsor branch, were originally proposed to be one horizontal to one particular, but the experience of two winters having proved that this was insufficient, they have in many cases been reduced or flattened, so as to make them about one and a half horizontal to one perpendicular. On the remaining portion of the Main line, the work not having been let out until last Spring, the slopes were contracted for at 1½ to 1.

In rock excavations, the contracts provide that the slopes shall be three inches to one foot; and the embankments are required to have slopes of one and a half horizontal to one perpendicular, excepting where formed of rock, when they are made one to one.

Viaducts and Bridges.—There are a number of important structures of this kind on the road. Of those already completed on the Main line, the Bedford viaduct across the Sackville river has five spans of 50 feet each, and is 52 feet in height. The viaduct over Fletcher's river has three spans, the centre one being 50 feet, and the end ones 30 feet each, at an elevation of 32 feet above the river. The superstructures of both are composed of wrought iron tubular girders. The Bridge across Nine Mile river, is of timber, 635 feet in length, in spans of 30 feet, and is about 20 feet in height. The bridge across Barney's brook has a timber superstructure of three spans of 30 feet, supported on stone piers and abutments at a height of 40 feet above the water. And the Shubenacadie river is crossed by a viaduct composed of wrought iron girders resting on stone piers and abutments in three spans of 49 feet and 22 feet in height.

On the portion of the Main road under construction, there are two large viaducts; one across the Shubenacadie river of three spans of 100 feet each and 35 feet in height, and the other across the Stewiacke river of two spans of 100 feet, 32 feet above the river; the superstructures of both of wrought iron girders.

On the Windsor branch the bridge across the Sackville River has three spans of 30 feet, at a height of 40 feet above the river. Section three viaduct has seven spans of 30 feet, from 25 to 30 feet in height. The Big Bog brook viaduct has five spans of 50 feet and is 95 feet in height. The St. Croix viaduct five spans, one of 70 feet and four of 30 feet each, at a height of 65 feet above the river. The superstructures of Sackville river bridge and Section 3 viaduct are composed of timber, that of the Big Bog brook of wrought iron girders, and the St. Croix viaduct has the centre span of iron and the others of timber.

All the other road and brook bridges, both on the Main line and Windsor branch, have timber superstructures supported on stone piers and abutments.

Railway Superstructure.—This is constructed on a plan the same as is in use on a number of railways in Great Britain. The iron rails of 63 pounds per yard are supp[illegible] at intervals, averaging about 2½ feet, by cast iron chairs, weighing 33 pounds each at the rail joints, and twenty-two pounds intermediate. The chairs rest upon wooden cross sleepers 10 feet long, 10 inches wide, and 4½ inches thick; wooden side keys are used for securing the rails to the chairs.

Wharves have been constructed at the Halifax and at the Windsor termini of the road. That at Windsor, from the great rise of the tide in the Avon river, is necessarily of great height, and has been quite costly; but these, the station buildings, rolling stock, &c., will be referred to again.

With this brief notice of the leading characteristics of the road, I will now proceed to give the results of the investigations made as to the expenditures, with an estimate of the probable amount required to complete the work, and reserve such remarks as I may wish to make on the plan of construction and present condition of the work, to a subsequent part of this report,—and first as to the expenditures.

The reports heretofore furnished by the Railway Board have contained but little information, as to the details of the expenditures, in an intelligible form, further than that so much money had been paid out. The quarterly balances from the Ledger, and the journal entries of the running expenses, which have been published, give but little insight to those wishing to become acquainted with the cost and financial affairs of the road.

Neither does an inspection of the books afford the information desired. This arises mainly from the manner in which the payments have been made—the same payment frequently covering works of grading, masonry, rail-laying, station buildings, and fencing; and although an effort has been made to separate the accounts in some cases, by a system of transfers, it has only rendered them more complicated, from there being no general accounts by which to carry the several items to a proper classification.

The interest which the public take in the road from its being a public work, built from the revenues and on the credit of the Province—the influence which it is confidently anticipated that its completion will have upon the business and prosperity, not only of the section of country through which it immediately passes, but of the whole Province—the expectation that if it is successful and self-sustaining that the same facilities will be extended to other sections—render it desirable that the fullest information and a fair and candid statement of the facts should be presented. To that end, every effort which time and circumstances would permit, has been directed.

In the discharge of this duty, and in compliance with the letter of instructions, to give "a detailed statement of the expenditure, classifying each account under its "proper heading," it was thought best to re-construct the accounts from the vouchers and quarterly returns made to the Financial Secretary, and present them in as simple a form as the nature of the subject would admit.

To do this would have been of easy accomplishment had the work been let out and the books been opened with reference to a proper classification, but this not having been done, it has involved much labor to bring them into the form they are now presented.

RECEIVER GENERAL'S ACCOUNTS.

The Railway accounts kept by the Receiver General are few in number and readily understood.

The monies expended by the Board of Railway Commissioners are drawn from him in large sums, or are placed to their credit in London on their requisition to that effect. The Receiver General also pays the interest falling due on the debentures issued, the salaries of the Commissioners and Chief Engineer, and the contingent expenses connected with his department of the Railway expenditures.

From the entries made in the books, the following is the state of the accounts, September 30th, 1857:—

Nova Scotia Railway in Account Current with the Receiver General.

Dr.

1854, Dec. 19.	To paid Commissioners, or placed to their credit	£55,000	0	0			
1855, " 31.	" do........do........do	146,710	5	2			
1856, " 31.	" do........do........do	246,411	17	6			
1857, Sep. 30.	" do........do........do	161,000	0	0			
					609,122	2	8
1854, Dec. 31.	To paid salaries	1,228	2	6			
1855, Dec. 31.	" do....do	3,137	10	0			
1856, Dec. 31.	" do....do	2,887	10	0			
1857, Sep. 30.	" do....do	1,724	15	7			
					8,977	18	1*
" "	To paid interest on Debentures, &c.				29,634	10	9
	" " expense account				391	9	11*
					£648,127	1	5

* The Vouchers for the payments made on account of salaries and expense account—with the exception of those for the year 1857—are mostly missing or mislaid.

CR.

1857, Sept. 30.	By General Revenue				£128,776	6	5
“ “	“ Debentures sold in Nova Scotia	49,125	0	0			
“ “	“ do.....do in London	381,250	0	0			
					430,375	0	0
“ “	“ Premiums on sale of Debentures and Bills of Exchange, including accrued interest				5,977	8	3
“ “	“ Cash—net earnings of the Railway for the year ending December 31, 1855				901	18	3
“ “	“ Baring, Brothers, & Co., advances made on Debentures in their hands				18,311	12	10
“ “	“ M. B. Almon, on Debentures as collateral				16,500	0	0
“ “	“ Interest due Bond holders				75	0	0
“ “	“ Bank of Nova Scotia				47,209	15	8
					£648,127	1	5

BOARD OF RAILWAY COMMISSIONERS' ACCOUNTS.

Nova Scotia Railway in Account Current with the Board of Railway Commissioners.

DR.

1857, Sept. 30.	To paid on account of the construction of the Railway to Sept. 30, 1857, as per Schedule marked A in the appendix				£627,653	1	2
“ “	To paid working expenses of the portion of the road in use for the years 1855, 1856 and 1857				8,406	14	4½
“ “	To cash paid Receiver General as nett profits of running the road in 1855				901	18	3
“ “	To cash on hand and in Bank	1,832	13	5½			
“ “	To do. in hands of William McCully, Liverpool	109	7	10			
“ “	To do. overpaid Wm. Davis, and overcharge on traffic account, to be corrected in Dec	4	2	0			
					1,496	3	3½
“ “	To paid shipment per “Thomas,” vessel lost	19,274	9	2			
“ “	To cash paid Neilson & Co., Glasgow	17,736	9	1			
					37,010	18	3
					£675,468	15	4

CR.

1857, Sept. 30.	By cash from Receiver General				£609,122	2	8
“ “	By cash receipts for 1855, 1856, and 1857, from earnings of Railway	£11,177	4	1½			
“ “	By cash received for rent of Gov. Farm	33	3	2			
“ “	By premium on Bills of Exchange	77	17	5½			
					11,288	4	9
“ “	By amt. due Baring, Bro's. & Co				55,007	19	5½
“ “	By amt. due Conlon & Keating	8	6	6			
“ “	By amt. due P. M. Cunningham	10	11	5			
“ “	By amt. due John Stairs	31	10	6½			
					50	8	5½
					£675,468	15	4

The Schedule (A) above referred to shews:—1st, the number of the vouchers; 2d, the dates of payment; 3d, the names of the individuals to whom payments have been made; 4th, the amount paid; 5th, to what account the same has been charged; and, 6th, the nature of the voucher on file in the Financial Secretary's office.

The items of the expenditures with the notes of the vouchers are brought down to Sept. 30th, 1857, being the date to which the accounts were made up on the close of this investigation.

COST OF COMPLETING THE WORK.

In contracting the work, the Main line was divided into eleven sections, and the Windsor branch into five, which were severally let out in pursuance of advertisements inviting sealed proposals for the performance of the work.

The following table exhibits, at one view, the number of sections, names of contractors, length of sections, amount of contracts, and dates of letting:

No. of Section.	Names of Contractors.	Length of Section.		Amount of Contract.			Date of Letting.
		Miles.	Chains.	£	s.	d.	
Main Line.							
No. 1.	Cameron & Co.	6	45	22925	0	0	June, 1854.
“ “	Wyman & Co.		“	846	0	0	March 5th, 1855.
“ “	John Cameron		“	725	0	0	April 16th, “
“ 2.	Black & Co	1	9½	9398	16	0	Sept. 22d, 1854.
“ “	Wyman & Co.		“	360	0	0	June, 1855.
“ 3.	Creelman & Co.	2	57	24201	0	0	Dec. 2d, 1854.
“ 4.	William Grant	0	70	2505	0	0	Feb. 14th, 1855.
“ “	William Turnbull		“	2956	10	5	“ “
“ “	James Kennedy		“	171	0	0	Nov., “
“ “	James Grant		“	1145	16	3	Feb. 1856.
“ 5.	Black & Co	8	60	46360	19	3	April 14th, 1855.
“ 6.	Donald Fraser	2	40	16798	8	6	Sept. 15th, “
“ 7.	Sutherland & Sons	7	0½	30774	10	11	Nov. 27th, “
“ 8.	Johnston & Blackie	10	9½	41616	18	4	May 10th, 1856.
“ 9.	Sutherland & Sons	4	41	21993	3	10	Jan. 8th, 1857.
“ 10.	Do	8	58	31696	19	7	June 1, “
“ 11.	Walker & Co.	8	25	19879	5	8	“ “
Windsor Branch.							
No. 1.	Cameron & Co.	6	7½	33305	0	3	July 7th, 1855.
“ “	Johnston & Blackie						Sept. 30th, 1856.
“ 2.	McDonald & Simpson	6	39	28000	0	0	July 7th, 1855.
“ 3.	Cameron & Co.	5	76	41411	11	5	“ “
“ “	Johnston & Blackie						Sept. 30th, 1856.
“ 4.	Cameron & Co.	5	74	47458	13	3	July 7th, 1855.
“ 5.	McDonald & Simpson	6	30	21500	0	0	“ “
Extension.	Do	1	“	8627	6	8	Sept. 18th, “
Bedford Viaduct.	T. R. Caudle			2747	14	3	April 10th, “
“	Thomas Hanright			472	13	0	Jan. 29th, 1856.

The contracts under which the work has been performed, with a few exceptions, provide for the entire completion of the works—of grading, masonry, bridging and rail laying, on each section—for a gross or lump sum; and on all, excepting the first four sections of the main line, for the upholding or keeping in repair the road bed for twelve months after completion—the contractors finding all materials except iron rails, chairs, spikes and keys—subject however to addition or deduction by a schedule of prices, should alterations in the line, or quantities, or nature of the works be made.

On the first four sections, the grading, the furnishing the sleepers, and the rail laying, were let out under separate contracts or done by days labor. On sections 9, 10, and 11, the fencing is included in the contract sum and on the others it has been let out separately.

The station buildings, wharves, rolling stock, &c., have generally been let out by tender and contract, but in some instances by negotiation with individual contractors, and in others the work has been done by days labor, the Board of Commissioners furnishing the materials.

From the work having been let out under several contracts on the first four sections, and in some cases without prices attached—it was found necessary, in order to exhibit the cost under a proper classification, to appraise the value of certain items on these sections, and charge them to their proper account. In making the appraisement and distribution of the sleepers, it was found that a much larger numbers had been required and paid for than went into the work. After allowing 1¼ miles for turnouts and station tracks, there remain 14,436 sleepers or sufficient to lay seven miles of road, and which cost £1541 7s. 11d. to be accounted for. Of this number about 400 only are on the ground. As the money has been paid, however, I have charged this sum to the railway superstructure.

On other sections of the road, difficulties of another kind are encountered in endeavouring to make an estimate of the cost, originating in a difference of opinion between the Engineer and Contractors as to the meaning or construction to be put on certain clauses and stipulations in the contracts.

In earth cuttings, the contracts specify that the slopes shall be one horizontal to one perpendicular, and the quantities exhibited, at the time of the letting, were estimated on such slopes. During the progress of the work, however, they were found insufficient, and were in some instances reduced to one and a half horizontal to one perpendicular, the Engineer in some cases having made agreements and given orders to that effect, while in others the contractors reduced them, or removed the material which had fallen into the cuttings, to enable them to complete their works, but without instruction from the Engineer—and for removing such extra material they claim to be paid.

Again, on several of the sections, where the road crosses lakes and bogs, the bottoms being composed of soft mud 10 to 50 or 60 feet in depth—large subsidencies have taken place, and much larger quantities of material have been required to fill them than was anticipated or shown on the schedule of work, and for the excess over the schedule quantities the contractors claim to be allowed.

Several of them also make claim for extra material required to supply the waste and shrinkage in making embankments where there was no subsidence.

These claims are met on the other side by referring to the following clauses in the contracts: "The quantity in each cutting and embankment is written upon the "longitudinal sections, and every care has been taken to insure their accuracy; con- "tractors must, however, examine the ground previous to tendering for the work; "and satisfy themselves on this point, as well as of the accuracy of the lengths, "depths, and quantities drawn or written upon the several sheets, and of the nature "of all the cuttings, and of the sites of all the embankments; for when a tender has "been accepted, no claim for extra work will be allowed for any real or supposed "inaccuracy therein, nor from slips or otherwise, as the contractor shall be bound "to construct the Railway, so that the gradients at the formation level shall be agree- "able to the gradients marked upon the longitudinal sections, with the breadths and "side slopes specified in the supplementary specification for the portion of the work "tendered for, and so as to accurately coincide with the curves and straight portions drawn and written in red on the ground plans. Embankments shall be made from the material taken out of the excavations so far as it goes, and the deficiency shall be made up by side cutting procured and deposited at the Contractor's risk and expense."

The contractors hold that the above clauses refer only to the profiles and quantities and plans exhibited, and do not cover inaccuracies of survey and soundings; and that so far from every care having been taken to insure accuracy in the quantities, no cross sections nor proper soundings had been taken, and that there are large discrepancies between the amount of work exhibited in the schedule and that actually performed. That by the contracts, the commissioners reserve to themselves the right of making alterations, and of requiring extra operations of any kind to be performed by the contractors, and, that it is specified that — "such alterations or any additional labor shall in no way affect the contract entered into further than that the same shall be paid for as extras at like rates as other work, and they reserve a like right to withdraw any portion of the work, and thereupon to make a corresponding deduction in payment." And that annexed to each contract was a schedule of quantities referred to in the specifications as follows: "The contractors shall fill in prices for the several descriptions of work enumerated in the annexed schedule, and by these rates the value of any extra or altered work shall be fixed, and the contract price increased or diminished by the amount thus ascertained, as the case may be, but should there be any extra or altered work for which no price has been given, then in these instances the value shall be decided by the engineer."

Other claims, such as damages for not being furnished with iron rails, for alterations made in the grade and line of the road, and for other items, are also made.

The whole amount of extra work which has been recognised and allowed by the Board of Commissioners and Engineer under the foregoing clauses, over and above the sums specified in the contracts, up to December 31st, 1857, is about £41,000. The additional claims which have been presented by the contractors, and which are now in dispute, amount to over £70,000.

It would, perhaps, be premature to go much into detail on the merits of these claims, although I am free to confess that for some of them—such as for additional material removed by reducing the slopes—the contractors are, in my opinion, entitled to be paid; for although the contracts provide that "the contractor shall be bound to construct the Railway, 'with the breadths and side slopes specified,'" this in clay and earth cuttings—such as are met with on this road—is impracticable. The slopes originally ought to have been not less than 1½ to 1; and at a few places a flatter slope even than this will be required to prevent the road being obstructed by slides. On equitable principles, I can see no reason why the extra sloping, where actually required, should not, as a general rule, be embraced under the clauses referring to extra work and extra operations.

The claims of another class, however, for additional material excavated, beyond what was shown on the profile and schedule, to make up for the waste and shrinkage in making embankments, in my opinion, ought not to be allowed. The contracts specify that "embankments shall be made from the material taken out of the excavations so far as it goes, and the deficiency shall be made up by side cutting procured and deposited at the contractors' risk and expense." I see no construction that can be put on this to raise a doubt or give the contractors a claim; they were bound to make all due allowances for waste and shrinkage in making their calculations.

The important item, however, in these claims, is that for the additional material required to fill the bogs and lakes. The quantities estimated and shown on the profiles and schedules of work, at the time of the letting, having proved erroneous, is the origin of these claims.

The contracts undoubtedly mean to put the risk of quantities with the contractors, but it is under the representation that "every care has been taken to insure their accuracy," and although the contractors are required to satisfy themselves on this point, it could scarcely be expected that they were each to have surveys and soundings made of the entire line,—some reliance must have been placed on the soundings made and the quantities estimated by the Engineer, especially under the representation above quoted.

It is difficult to understand how—where the bogs and lakes were so numerous, and where it was so evident to any one passing over the line that the bottoms were soft and yielding, and that large quantites of material would be required to fill them, —that no distinct understanding was had between the parties,—that no special mention or clause in the contract occurs in relation to them. The only mention made of subsidencies or settlements is under the head of upholding the road for twelve months after completion, and the prices attached to this item sufficiently show that the contractors did not allow for subsidencies of the character in question.

Notwithstanding, therefore, by the strict letter of some of the stipulations of the contracts, the risk of quantities appears to be with the contractors, still, taking the whole matter in view,—the general scope and spirit of the contracts, which assume that the quantities estimated are substantially correct,—I consider it a fair subject for settlement on equitable principles, depending on the facts and special merits of each claim. Some of them are undoubtedly extravagant; but as to others, a re-measurement of the work would be necessary in order to arrive at any satisfactory conclusion. If the approximate estimates made by the Engineer, of the additional quantity of material moved on the sections, are correct, at least one half of the total amount claimed would be stricken off.

None of these disputed claims are included in the following Estimate of cost. Where I have allowed for reducing slopes, it is in cases where the work still remains to be done.

It will be observed from the estimate, that a number of "General Accounts" are open with contractors who have two or more contracts to which various payments have been carried on the books. These payments I have taken the liberty of transferring to the section accounts where they properly belong, in order to exhibit the amount paid and the amount required to complete the respective sections. I have noted, however, in the margin, the sums transferred.

On sections 1 to 4 of the Main Line, which have for some time been completed, I have made an allowance for reducing the earth slopes and widening the embankments where they are not now to the proper dimensions. The great amount of curvature on this portion of the road renders it desirable to have it as perfect and free from liability to obstruction as possible.

In explanation of the terms "grading" and "superstructure" which frequently occur in the estimate, I would state that under "grading" is included the formation of the road bed generally, all excavations, embankments and masonry, and all wood and iron work in the viaducts and bridges; also, all work of a similar character in forming the station grounds. "Superstructure" includes the sleepers, rail-laying, carriage of materials, ballasting, and upholding the road for twelve months under the section contracts.

From the various circumstances referred to, the details of the estimate occupy more space than is usual, but I have thought it well to give them in full, that you may have before you the process by which the general results are arrived at, and be enabled to judge of their sufficiency.

With these explanatory remarks I proceed to the estimate:

ESTIMATE.

HALIFAX OR RICHMOND STATION.

The following sums have been expended for work at this station :—

	£	s.	d.
Thomas Gahagan, for grading at Station	£185	18	10
J. T. Edwards and others, for mason work	230	14	0
William Hawkins, for laying siding	80	0	0
S. Sutherland & Sons, for grading site for new Engine House, laying sidings, &c.	1,768	10	9
Various small contracts and days' work in forming new road at Station, cutting clay and working at brick yard, laying sidings, &c., (per Schedule A.)	2,088	5	10
2075 sleepers used in Station sidings and Depôt tracks, furnished under several contracts, at 2s. 3d	233	8	9
Add for 14,436 sleepers, paid for but not used on the road, including 400 lying about Station and along the line	1,586	17	11
Amount paid to September 30th, 1857	6,173	11	1
Add for extending Station grounds, grading sites for new buildings, laying additional tracks, &c., (grading, £4000, super, £500)	4,500	0	0
Total	£10,673	11	1

Classification.

	Amount paid.			Estimated Cost.		
Grading	£3,873	11	1	7,873	11	1
Superstructure, &c	2,300	0	0	2,800	0	0
	£6,173	11	1	10,673	11	1

MAIN ROAD ALTERATIONS.

	£	s.	d.
There has been paid for alterations of Main road along Bedford Basin	£2,308	19	1
And for work on Beaver Bank road	25	0	0
Total	£2,333	19	1

SECTION NO. 1, MAIN LINE, LENGTH 6 MILES 45 CHAINS.

	£	s.	d.
Cameron & Co., for grading, &c.	£22,694	0	0
Wyman & Co., for laying rails and ballasting	870	14	9
John Camerou, for.....do..........do	725	0	0
Donald Camerou, for filling out slopes of embankments	200	0	0
.....Do.....for laying and adjusting rails	280	9	8
John Camerou, for completing embankments	75	0	[illegible]
Various small charges and days' work on this section, for ballasting, laying rails, building cattle-guards, truckage of iron, &c., (per Schedule A.)	1,098	3	8¼
18,520 sleepers furnished under several contracts, at 2s. 3d	1,521	0	0
Amount paid to September 30th, 1857	£27,464	7	8¼
Add for widening out embankments, reducing slopes, &c	500	0	0
	£27,964	7	8¼

Classification.	Amount paid.			Estimated Cost.		
Grading, &c.	£21,149	12	8½	£21,649	12	8½
Superstructure	6,314	15	0	6,314	15	0
	£27,464	7	8½	£27,964	7	8½

SECTION NO. 2, MAIN LINE, LENGTH 1 MILE 9½ CHAINS.

The grading and ballasting of this section was let out to Black & McDonald, and the rail laying to Wyman & Co.

Paid Black & McDonald for grading, &c., amount of contract less £100 for work not finished	£9,298	16	0
" Wyman & Co., for rail laying, &c.	347	0	0
" for 2305 sleepers furnished under several contracts, at 2s. 3d.	259	6	3
Amount paid to September 30th, 1857	9,905	2	3
Add to widen cuttings and embankments	100	0	0
	£10,005	2	3

Classification.	Amount paid.			Estimated Cost.		
Grading, &c.	£8,964	3	6	£9,064	3	6
Superstructure	940	18	9	940	18	9
	£9,905	2	3	£10,005	2	3

SECTION NO. 3, MAIN LINE—LENGTH 2 MILES 57 CHAINS.

CREELMAN & CO., CONTRACTORS.

Considerable work remains to be done to put this section in a condition not to give future trouble. The slopes of the long cutting next north of Bedford bridge require to be reduced, and several of the other cuttings require some additional sloping. The embankments, also, through Lily Lake and Rocky Lake, require to be widened out.

Paid Creelman & Co. for work done by them	£21,354	0	0
" William Turnbull for finishing embankments	310	11	3
" Johnston & Blackie for grading, &c.	3,116	13	0
" A. Feetham's returns—days' work finishing line at Sackville bridge, originally charged to bridge	188	1	7½
" A. Feetham's returns—extra work finishing and reducing slopes, (£107 10s. added for use of locomotive and credited to Revenue)	1,110	1	4
" James Fraser for excavating, rail laying, and ballasting Sackville station	137	5	3
" Sutherland and Sons for laying siding at Bedford	148	0	0
" T. Hanright for raising road at Scott's bridge	20	0	0
" for 6090 sleepers, including 500 for Bedford turnout, furnished under several contracts, at 2s. 3d.	685	2	6
Amount paid to Sept. 30th, 1857	£27,069	14	11½
Add for bank walls and to reduce earth slopes to 1½ to 1 and widen embankments	1,000	0	0
	£28,069	14	11½

Classification.	Amount paid.			Estimated Cost.		
Grading, &c.	£24,163	7	11½	£25,163	7	11½
Superstructure	2,906	7	0	2,906	7	0
	£27,069	14	11½	£28,069	14	11½

SECTION NO. 4, MAIN LINE—LENGTH 70 CHAINS.

This section was let out in several contracts. The following are the amounts paid:

Paid William Grant for grading, &c.				£2,514	0	3
" William Turnbull for grading and rail laying	£1,388	12	6			
" " for embankm't across Rocky lake	833	6	8			
" " for completing work	733	11	3	2,955	10	5
" James Kennedy and others for rock cutting				376	13	3½
" James Grant for rock cutting				1,332	18	4
" Archibald Rutherford for trucking iron from Sackville to section 4				31	7	6
" for loading sleepers and hauling keys				18	2	6
" for eight kegs gunpowder, &c.				18	9	10½
" 1805 sleepers, furnished under several contracts, at 2s. 3d				203	1	3
Amount paid to Sept. 30th, 1857				£7,450	3	5
Add to widen embankments, reduce slopes, &c.				100	0	0
				£7,550	3	5

Classification.	Amount paid.			Estimated Cost.		
Grading, &c.	£6,577	17	2	£6,677	17	2
Superstructure	872	6	3	872	6	3
	£7,450	3	5	£7,550	3	5

SECTION NO. 5, MAIN LINE—LENGTH 8 MILES 60 CHAINS.

BLACK, McDONALD & IRONS, CONTRACTORS.

The original contract for this section embraced the grading, superstructure, and the erection of the iron girders of Fletcher's bridge—the cost of rivetting and putting the girders together at the works being paid for by the Commissioners.

Amount of original contract—Grading	£35,675	10	9			
" " " Superstructure	10,685	8	6	£46,360	19	3

Extras allowed under Contract or by subsequent agreement.

* Sloping cuttings, 1½ to 1, per agreement	£2,800	0	0
Taking out and filling up bog, in cut No. 5, with stone, per agreement	375	0	0
Extra side ditches, 4774 l. yds., at 3s.	716	2	0
" " in cuts 9 and 13, 397 cubic yds., at 2s. 7½d.	52	2	1
Extra work on culverts and drains	538	12	9

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* Of this—work to the value of £1,140 remains to be done by Engineer's estimate.

Extra bridge at peg No. 815	144	6	2			
Grading, Fletcher's station	333	19	9			
Ballasting, sleepers and rail laying, at Fletcher's station	92	12	6			
Laying rails at Windsor junction	31	0	0			
Platform at Fletcher's station	134	16	3	[illegible],218	11	6
				£51,579	10	9

(Amount paid Black & Co., to Sept. 30th, 1857, £47,832 15 5.)

Add to widen embankments, complete grading of way stations, extra drains and contingencies (gr. £400, super. £200)	600	0	0
" Iron girders of Fletcher's bridge, paid by Commissioners	917	10	6½
Total	£53,097	1	3½

Classification.	Amount paid.			Estimated Cost.		
Grading, &c.	£36,688	18	2	£41,035	13	6
Superstructure	11,009	1	0	11,009	1	0
Station buildings	134	16	3	134	16	3
Iron girders of Fletcher's bridge	917	10	6½	917	10	6½
	£48,750	5	11½	£53,097	1	3½

SECTION NO. 6, MAIN LINE—LENGTH 2 MILES 40 CHAINS.

DONALD FRASER, CONTRACTOR.

The original contract for this work embraced the grading and superstructure. In addition the contractor has graded the station grounds at Grand Lake and erected the station building. Two clay cuttings require to be sloped to 1½ to 1; the other cuttings are mostly through rock.

Amount of original contract—Grading	£14,470	18	6			
" " " Superstructure	2,327	10	0	£16,798	8	6

Extra work allowed to December 31st, 1857.

For grading station grounds at Grand Lake	£867	2	0			
" laying station tracks, &c.	116	17	6			
" building station house and platforms	227	7	0			
" extra work on culverts and drains	233	13	6	1,445	0	0
				£18,243	8	6

(Amount paid to Sept. 30th, 1857, £18,118 8 6.)

Add for reducing slopes of clay cuttings to 1½ to 1, and for widening embankments	£500	0	0			
" for extra ditches and contingencies, and to complete grading and superstructure of station grounds (gr. £300, supr. £100)	400	0	0	900	0	0
				£19,143	8	6

Classification.	Amount paid.			Estimated Cost.		
Grading, &c	£15,471	14	0	£16,371	14	0
Superstructure	2,419	7	6	2,544	7	6
Station buildings	227	7	0	227	7	0
	£18,118	8	6	£19,148	8	6

SECTION NO. 7, MAIN LINE, LENGTH 7 MILES.

SUTHERLAND & SONS, CONTRACTORS.

The original contract on this section embraced the grading, superstructure, and erection of the girders of the first Shubenacadie bridge; and there has been added a contract for fencing, which is paid for as extra work.

Amount of original contract—Grading	£24,145	18	1			
" " " Superstructure	6,628	12	5	£30,774	10	6

Extra Work allowed to Dec. 31st, 1857.

10,532 cubic yards in raising grade of embankment No. 20, at 2s. 2d	£1,140	19	4			
4,385 cubic yards in sloping cut No. 15 1½ to 1, at 2s. 2d.	475	0	10			
Extra work on bridges, at pegs 23 and 54	1,250	18	0			
" on bridge at peg No. 513	409	5	0			
" on culverts and drains, side ditches and brook diversions	1,765	9	8			
5,280 l. yards of fencing, at 1s. 1d.	286	0	0	5,327	12	10
				£36,102	3	4

*(Amount paid Sutherland & Sons to Sept. 30th, £33,917 8 4)

Add for additional drains and side ditches, grading station grounds and turnouts, and protecting wing walls and embankments at bridges, (grading, £500, super., £300)	£ 800	0	0			
" for reducing earth slopes to 1½ to 1	1000	0	0			
" for wall and paving to protect railway through Long and Grand Lakes	200	0	0			
" 3066 l. yards of fencing	165	17	6	2,165	17	6
Iron girders of first Shubenacadie bridge, paid by Com'rs				1,799	18	5½
				£40,067	19	3½

Classification.	Amount paid.			Estimated cost.		
Grading, &c	£30,657	8	4	30,887	10	11
Superstructure	3,000	0	0	6,928	12	5
Fencing	260	0	0	451	17	6
Iron Girders, first Shubenacadie bridge	1,799	18	5½	1,799	18	5½
	£35,717	6	9½	40,067	19	3½

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* Includes £2,700 from Sutherland & Sons' General Account.

SECTION NO. 8, MAIN LINE—LENGTH 10 MILES 9¼ CHAINS.

JOHNSTON & BLACKIE, CONTRACTORS.

Amount of contract—Grading	£31,282	7	0			
" " Superstructure	10,334	11	4	£41,016	18	4

Extra work allowed to December 31st, 1857.

For extra work by raising grade of embankments, 8326 cubic yards, at 1s. 5d.	£589	15	2			
" sloping cuttings No. 5 and 7 to 1¼ to 1, 15,620 C. yards at 1s. 5d.	*1,106	8	4			
" extra work on Nine Mile River bridge	1,102	0	0			
" " on Barney's Brook bridge	656	0	6			
" " on bridge at pegs 690 to 694	84	10	0			
" " on bridge at Truro road	45	14	6			
" " on culverts, drains, and brook diversions	2,105	10	4			
" " in grading Elmsdale station, 7480 C. yards, at 6d	187	0	0			
" " in grading Shubenacadie station, 9722 C. yards, at 1s. 5d	688	12	10	6,565	11	8
				£48,182	10	0

† Amount paid to Sept. 30th, 1857, £38,576.

Add for sloping cuttings 1¼ to 1, completing bridges, extra drains, side and bank ditches, protecting embankments at wing walls of bridges, grading station grounds and laying sidings, (grad. £1600, supr. £400)	2,000	0	0
	£50,182	10	0

Classification.	Amount paid.			Estimated Cost.		
Grading, &c	£34,876	0	0	£39,447	18	8
Superstructure	3,700	0	0	10,734	11	4
	£38,576	0	0	£50,182	10	0

SECTION NO. 9, MAIN LINE—LENGTH 4 MILES 41 CHAINS.

SUTHERLAND & SONS, CONTRACTORS.

This contract embraces the grading, superstructure, fencing, and the erection of the iron girders of the second Shubenacadie bridge.

Amount of contract—Grading	£16,783	3	0			
" " Superstructure	4,349	17	6			
" " Fencing	860	3	4	£21,993	3	10
Add for contingencies and extra masonry in Shubenacadie bridge and culverts	£1,000	0	0			
" for extra drains, side ditches, forming way [illegible]ations, and laying sidings (grad. £500, [illegible]pr. £300)	800	0	0	1,800	0	0
				23,793	3	10
Iron girders for second Shubenacadie bridge				7,000	0	0
				£30,793	3	10

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* Of this—work to the value of £575 3s. 4d. remains to be done.

† Includes £3000 from Johnston & Blackie's gen. acc't.

Classification.	Amount paid.	Estimated Cost
Grading, &c	£8,066 0 0	£18,283 3 0
Superstructure	1,000 0 0	4,649 17 6
Iron girders		7,000 0 0
Fencing	150 0 0	860 3 4
	£9,216 0 0	£30,793 3 10

SECTION NO. 10, MAIN LINE—LENGTH 8 MILES 58 CHAINS.

SUTHERLAND & SONS, CONTRACTORS.

This contract includes the grading, superstructure, fencing, and the erection of the iron girders of the Stewiacke River bridge.

Amount of contract—Grading	£22,008 8 3	
" " Superstructure	8,025 0 0	
" " Fencing	1,663 11 4	£31,696 19 7
Add for extra masonry on the Stewiacke and other bridges, and for contingencies in crossing bogs	2,000 0 0	
" for grading in forming way stations, and for additional drains and side ditches	1,000 0 0	
" for station tracks and sidings	300 0 0	3,300 0 0
		£34,996 19 7
(Amount paid to Sept. 30th, 1857, £4973.) Add for iron girders of Stewiacke bridge		£4,500 0 0
		£39,496 19 7

Classification.	Amount paid.	Estimated Cost.
Grading, &c	£4,683 0 0	£25,008 8 3
Superstructure	270 0 0	8,325 0 0
Fencing	20 0 0	1,663 11 4
Iron girders		4,500 0 0
	£4,973 0 0	£39,496 19 7

SECTION NO. 11, MAIN LINE—LENGTH 8 MILES 25 CHAINS.

WALKER & CO., CONTRACTORS.

This contract embraces the grading, superstructure and fencing.

Amount of contract—Grading	£11,438 16 6	
" " Superstructure	6,733 12 6	
" " Fencing	1,706 16 8	£19,879 5 8
Add for grading station grounds at Truro and way stations, and for extra work on public road diversions	£800 0 0	
" for additional masonry and bridging for Mill Brook and extra drains and culverts	2,400 0 0	
" for station tracks and sidings at Truro depôt and way stations	600 0 0	3,800 0 0
		£23,679 5 8

(Amount paid Sept. 30th 1857, £4139.)

Classification.	Amount paid.	Estimated Cost.
Grading, &c	£3,379 0 0	£14,638 16 6
Superstructure	700 0 0	7,333 12 6
Fencing	60 0 0	1,706 16 8
	£4,139 0 0	£23,679 5 8

SACKVILLE BRIDGE.

Paid R. Caudle for building stone work of bridge	£2,750 18 9
" William Adams for do. and carpentry	435 9 9½
" Thomas Hanright for carpentry and erecting girders	501 12 7½
" for iron girders	2,540 19 8
" for materials and labor, erecting girders, &c., per schedule A	1,309 1 11
Total	£7,538 2 9

MISCELLANEOUS CONSTRUCTION.

"Upholding" or Repairs of road, for the year 1855, charged to this account	£410 14 6
Making cattle guards, collecting materials, repairing road tools, &c., in 1856, per schedule A	243 6 8½
Ditto, ditto, in 1857, ditto	114 6 9
Amount paid to Sept. 30, 1857	£768 7 11½
Add for miscellaneous, cattle guards, and farm crossings	2,000 0 0
	£2,768 7 11½

Classification.	Amount paid.	Estimated Cost.
Grading, &c	£268 7 11½	£2,018 7 11½
Superstructure	500 0 0	750 0 0
	£768 7 11½	£2,768 7 11½

SECTION NO. 1, WINDSOR BRANCH—LENGTH 6 MILES, 7½ CHAINS.

CAMERON & Co. — afterwards JOHNSTON & BLACKIE, — CONTRACTORS.

This section was originally contracted for by Cameron & Co. The contract afterwards cancelled by mutual consent, and a new one made with Johnston & Blackie. Several changes from the original line and grade have been made, and embankments have been substituted for two viaducts originally proposed. The cuttings are mainly through clay. One or two embankments require to be widened.

Amount of Contract,—Grading	£27,383 6 0	
" " Superstructure	5,921 14 3	£33,305 0 3

Extra Work allowed, to Dec. 31st, 1857.

For sloping cuttings 1½ to 1, "and as much flatter as may be necessary to secure them," per agreement*	£3,000 0 0	
" Raising grade in Cut No. 18, per agreement	150 0 0	
" Extra work on bridge at peg No, 16	121 8 3	
" " " at peg No. 315	85 7 4	
" " on culverts, drains, and side ditches	71 17 11	
" " in extra size of side ditches, 4207 cubic yards, at 2s. 3d.	473 5 9	
" " in grading Windsor junction, 4734 cubic yards, at 2s. 3d.	532 11 6	
" Laying one set of points and crossings	5 0 0	4,439 10 9
		£37,744 11 0

†(Amount paid to Sept. 30th, 1857, £32,474.)

* Of this, work to the value of £170 0 0 remains to be done by Engineer's estimate.
† £3,000 0 0 of this amount transferred from Johnston & Blackie's General Account.

	£	s.	d.	£	s.	d.
Add for bank walls	1,000	0	0			
" for additional grading at Windsor junction,						
" and for laying sidings, (grading, £500, super., £200)	700	0	0	1,700	0	0
				£39,44[illegible]	[illegible]	[illegible]

Classification.	Amount paid			Estimated Cost.		
Grading, &c.	£27,474	0	0	[illegible]	[illegible]	[illegible]
Superstructure	5,000	0	0	[illegible],126	14	3
	£32,474	0	0	39,444	11	0

SECTION NO. 2, WINDSOR BRANCH—LENGTH 6 MILES 39 CHAINS.

McDONALD & SIMPSON, CONTRACTORS.

Several alterations have been made on this section, both as to line and grade. The earth slopes have generally been reduced to about 1¼ to 1. Some of the embankments require raising and widening out.

	£	s.	d.	£	s.	d.
Amount of contract—Grading	£22,227	15	6			
" " Superstructure	5,772	4	6	£28,000	0	0

Extra work allowed to December 31st, 1857.

	£	s.	d.	£	s.	d.
For additional embankment, &c., at Sackville River bridge, per agreement	£875	0	0			
" raising grade on embankments No. 19 and 20, 7059 cub. yds., at 2s. 8d.	941	4	0			
" allowance on account of embankment No. 1	1,100	0	0			
" altering road at peg No. 667, 250 c. ys. at 2s. 8d	33	6	8			
" extra work on culverts, drains, and water courses	1,206	6	0			
" extra work on bridges	31	19	0			
" grading siding at Mitchell's road, 750 [illegible] 2s. 8d	[illegible]100	0	[illegible]			
" grading siding at Beddoes' road, 1200 [illegible] 2s. 8d	160	0	0	£4,447	15	8

* Amount paid to Sept. 30th, 1857, £28999.

	£	s.	d.	£	s.	d.
Add for bank walls, extra sloping, and bank drains	£500	0	0			
" for completing station grounds and sidings, (grading £200, super. £2000)	400	0	0			
" for masonry or rip rap wall to protect embankment at bridges	200	0	0	1,100	0	0
				33,547	15	8

Classification.	Amount paid.			Estimated Cost.		
Grading	23,799	0	0	27,575	11	2
Superstructure	5,200	0	0	5,972	4	6
	£28,999	0	0	33,547	15	8

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* £5,000 of this amount transferred from McD. & S's. General Account.

SECTION NO. 3, WINDSOR BRANCH—LENGTH 5 MILES 76 CHAINS.

CAMERON & CO., AFTERWARDS JOHNSTON & BLACKIE, CONTRACTORS.

Several alterations of the original location have been made on this section. Also, changes of grade which affect the quantities. A viaduct was originally proposed and contracted for across 3d Lake, but a solid embankment has been substituted. The cuttings are mostly through rock. At one or two places, where the grade line runs nearly level with the surface of bogs, some piling may be found necessary.

Amount of contract—Grading	£34,623 10 5	
" " Superstructure	6,788 1 0	£4[illegible],411 11 5

Extra work allowed to Dec. 31st, 1857.

For 17,020 cub. yds. of rock put into embankm't No. 2, per agreement, at 3s. 6d	£2,978 10 0	
" 4,278 cub. yds. in raising grade on embankm't No. 11, at 3s. 6d	748 13 0	
" this sum, per agreement, for substituting embankment in place of viaduct, &c	500 0 0	
	40 12 6	
" extra work on bridge at peg No. 70	891 14 3	
" " on " at peg No. 147	979 0 3	
" " on " at pegs No. 87 and 91		
" building pile bridge through bog on embankment No. 12, say	1,200 0 0	
	23 8 6	
" extra work on road alterations	146 12 8	
" " on culverts and drains		7,508 11 2
		£48,920 2 7

* (Amount paid to Sept. 30th, 1857, £44,146 8 7.)

Add for straightening road and widening cuts where line altered by Cameron & Co	£800 0 0	
" for additional material to embankm't No. 2, slope wall at viaducts, grading Uniacke station, laying siding, &c., (grad. £600, sup. £200)	800 0 0	
" for extra drains, side and bank ditches, and for excavating or piling where grade is near surface	700 0 0	2,300 0 0
		£51,220 2 7

Classification.	Amount paid.	Estimated Cost.
Grading, &c	£38,146 8 7	£44,232 1 7
Superstructure	6,000 0 0	6,988 1 0
	£44,146 8 7	£51,220 2 7

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* Includes £4,139 6s. 3d. from Johnston & Blackie's General account.

SECTION NO. 4, WINDSOR BRANCH,—LENGTH 5 MILES 74 CHAINS.

CAMERON & Co., CONTRACTORS.

Considerable work remains to be done on this section to complete it according to contract. Several of the rock and clay cuttings are not taken out to the proper width by from three to five feet, and the larger embankments are generally narrow and require to be widened.

Amount of contract,—Grading	£41,705 18 9	
" " Superstructure	5,752 14 6	£47,458 13 3

Extra Work allowed to Dec. 31st, 1857.

Grading at St. Croix Station, 4,137 cubic yds., at 2s. 9d.	£568 16 9		
Extra work on Big Bog brook viaduct	870 16 4		
" on culverts, drains, and side ditches	98 17 2		
Allowance to the contractors for substituting embankment and culvert in place of viaduct at Little Meadow brook, viz., the contract price of the viaduct, £4484 2 7, and the estimated cost of the girders, which were to have been furnished by the Com'rs., Girders	£657 5 5		
Freight and Insurance	52 12 0		
Erecting	154 0 0	863 17 5	2,402 7 8
			£49,861 0 11

(Amount paid to Sept. 30th, 1857, £46,132 5 0)

Add for reducing slopes of clay and earth cuttings to 1½ to 1	£2,500 0 0	
" for extra grading, bank ditches, and contingencies	600 0 0	
" for turnouts at St. Croix, &c.	200 0 0	3,300 0 0
" for Iron girders at Big Bog brook bridge, paid by Commissioners		2,230 6 6
		£55,391 7 5

Classification.	Amount paid.	Estimated Cost.
Grading, &c.	£41,132 5 0	£47,208 6 5
Superstructure	5,000 0 0	5,952 14 6
Iron Girders	2,230 6 6	2,230 6 6
	£48,362 11 6	£55,391 7 5

SECTION NO. 5. WINDSOR BRANCH—LENGTH 6 MILES 30 CHAINS.

McDONALD & SIMPSON, CONTRACTORS.

The slopes on this section are now taken out somewhat flatter than 1 to 1, but are quite irregular—some of the cuttings are not to the full width.

Amount of contract—Grading	£16,659 17 4	
" " Superstructure	4,840 2 8	£21,500 0 0

Extra work allowed to December 31st, 1857.

	£	s.	d.	£	s.	d.
For extra work on St. Croix viaduct	£510	4	9			
" " on bridges, 15 feet spans	2,437	16	6			
" " on " 12 feet spans	782	17	6			
" " on culverts and drains, including side ditches	1,128	14	6	4,859	13	3
				£26,359	13	3
Add for sloping clay cuttings 1½ to 1	£1,000	0	0			
" for extra drains, ditches, grad'g, sid'g, &c., (gra. £400, sup. £200)	600	0	0	1,600	0	0
Add cost of Iron girders and labor on St. Croix viaduct, paid by Commissioners				1,326	19	5
				£29,286	12	8

	£	s.	d.
Grading, &c	£22,919	10	7
Superstructure	5,040	2	8
Iron girders of St. Croix viaduct	1,326	19	5
	£29,286	12	8

The monthly payments having been made on joint account of this contract, and "Sec. 5 extension,"—the classification is made at the end of the estimate for the latter on the next page.

SECTION 5, EXTENSION, (INCLUDING STATION GROUNDS AT WINDSOR,) LENGTH 1 MILE.

McDONALD & SIMPSON, CONTRACTORS.

This work was let out by the cubic yard at the Schedule prices of section No. 5. The cost sums up as follows:

	£	s.	d.	£	s.	d.
19,711 cubic yds. of excavation in road bed at 1s. 3d.	£1,231	18	9			
65,089 " of do in forming station grounds, at Windsor, at 1s. 3d.	4,068	1	3			
Bridge at Winkworth road	1,757	14	6			
" at peg No. 26	162	5	6			
Road Alterations	315	0	0			
Culverts and drains	285	17	6			
Grubbing and clearing on line	65	0	0	£7,885	17	6
2150 cubic yards of ballasting, at 1s. 4d.	143	6	8			
1926 l. yards of rail laying, at 1s. 3d.	120	7	6			
2934 sleepers, at 2s. 6d.	366	15	0			
Laying two sets of switches and crossings, at £6	12	0	0			
Carriage of materials, $1\frac{1}{10}$ miles, at £90	99	0	0	741	9	2
Total to Dec. 31st, 1857				£8,627	6	8
Add to complete filling of station grounds, 45,000 cubic yards of excavation, at 1s. 3d				2,812	10	0
Add for additional station tracks, sidings, and miscellaneous, (grading, £300, super. £300)				600	0	0
				£12,039	16	8

Grading, &c.	£10,998 7 6
Superstructure	1,041 9 2
	£12,039 16 8

Classification of Cost of Section No. 5 and Extension.

	Amount paid.	Estimated Cost.
Grading, &c., Section No. 5	*£27,032 13 5½	£22,919 10 7
" Extension		10,998 7 6
Superstructure, Section No. 5	5,000 0 0	5,040 2 8
" Extension		1,041 9 2
Iron Girders, St. Croix bridge	1,326 19 5	1,326 19 5
	£33,359 12 10½	£41,326 9 4

RECAPITULATION of the foregoing Estimates for the Grading *and* Superstructure *of the several Sections.*

	GRADING.		SUPERSTRUCTURE.	
	Amount Paid.	Estimated Cost.	Amount Paid.	Estimated Cost.
MAIN LINE.				
Richmond Station	3873 11 1	7873 11 1	2300 0 0	2800 0 0
Road Alterations	2333 19 1	2333 19 1	0 0 0	0 0 0
Section No. 1	21149 12 8½	21649 12 8½	6314 15 0	6314 15 0
" " 2	8964 3 6	9064 3 6	940 18 9	940 18 9
" " 3	24163 7 11½	25163 7 11½	2906 7 0	2906 7 0
" " 4	6577 17 2	6677 17 2	872 6 3	872 6 3
" " 5	37606 8 8½	41953 4 0½	11009 1 0	11009 1 0
" " 6	15471 14 0	16371 14 0	2419 7 6	2544 7 6
" " 7	32457 6 9½	32687 9 4½	3000 0 0	6928 12 5
" " 8	34876 0 0	39447 18 8	3700 0 0	10734 11 4
" " 9	8066 0 0	25283 3 0	1000 0 0	4649 17 6
" " 10	4683 0 0	29508 8 3	270 0 0	8325 0 0
" " 11	3379 0 0	14638 16 6	700 0 0	7333 12 6
Sackville Bridge	7538 2 9	7538 2 9	0 0 0	0 0 0
Miscellaneous	268 7 11½	2018 7 11½	500 0 0	750 0 0
£	211408 11 8½	282209 16 0½	35932 15 6	66109 9 3
WINDSOR BRANCH.				
Section No. 1	27474 0 0	33317 16 9	5000 0 0	6126 14 3
" " 2	23799 0 0	27575 11 2	5200 0 0	5972 4 6
" " 3	38146 8 7	44232 1 7	6000 0 0	6988 1 0
" " 4	43362 11 6	49438 12 11	5000 0 0	5952 14 6
" " 5	28359 12 10½	24246 10 0	5000 0 0	5040 2 8
" Extension		10998 7 6		1041 9 2
£	161141 12 11½	189808 19 11	26200 0 0	31121 6 1
Main Line	211408 11 8½	282209 16 0½	35932 15 6	66109 9 3
Windsor Branch	161141 12 11½	189808 19 11	26200 0 0	31121 6 1
Totals £	372550 4 8	472018 15 11½	62132 15 6	97230 15 4

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* Includes £1,108 13 5½ from McDonald & Simpson's General Account.

(2). IRON AND SUPERSTRUCTURE.

The following Statement shows the quantity, the total cost, and cost per ton,—including Insurance, Freight, Commissions, and all other charges,—of the Iron rails, chairs, spikes, keys, and switches, which have been delivered at Halifax and at Windor:

Tons.	cwt.	qrs.	lbs.		Total cost.			Average cost pr Ton.		
8057	2	2	13	of Iron Rails	£96329	18	6½	£11	19	0
650	0	0	0	of Joint Chairs	5525	19	0	8	10	4
2604	0	0	0	of Intermediate Chairs	22180	11	9½	8	10	4
203	17	2	9	of Spikes	3627	12	3½	17	7	5
			50,027	of eight inch Elm Keys	600	12	8	£12 per M.		
			272,839	of five inch do.	2461	0	7	£9 " "		
			60	sets of Switches and Crossings	2511	14	10½	£41	17	1 per set.
				Amount paid to Sept. 30, 1857	£133237	9	9			

Of the above, the following quantities of Rails, Chairs, and Spikes, were lost in the Bay of Fundy, on board the "Glide," in August 1855, on her passage from Halifax to Windsor; and as there was no insurance, the loss falls on the Province, and their place must be supplied by ordering an additional quantity.

125 .5	tons Rails, cost	£1498	5	0
15 .0	tons Joint Chairs, cost	127	15	0
48 .0	tons Intermediate Chairs, cost	408	16	0
6 .1	tons Spikes, cost	105	9	0
194 .6	Tons.	£2140	5	5

A lighter loaded with Bridge Iron, some Chairs and Spikes, was lost in Bedford Basin, but I have been unable to obtain the particulars. The Bridge Iron, of the value of £146 8s. 1½d., has since been replaced from England.

Estimate of the cost of a Mile of Superstructure, including Iron, at the average prices paid for materials and workmanship on the Nova Scotia Railway.

Rail weighing 63 lbs. per yard, or 99 tons per mile, at £12 per ton, delivered at Halifax	£1188	0	0
588 cast iron joint chairs, weighing 33 lbs. each, = 8.66 tons per mile, say 10 tons allowing for breakage, at £8 10s. 6d. per ton, delivered	85	5	0
3528 cast iron intermediate chairs, weighing 23 lbs. each, = 36.23 tons per mile, say 40 tons allowing for breakage, at £8 10s. 6d., delivered	341	0	0
8232 wrought iron spikes, weighing 10 oz. each, = 2.3 tons per mile, say 2½ tons, at £17 7s. 6d.	43	8	9
588 eight inch Elm keys per mile, say 650, at £12 per M	7	16	0
3528 five inch Elm keys per mile, say 3,900, at £9 per M	35	2	0
2060 sleepers, 10 ft. long, 4½ by 10 inches, at 1s. 10d. each	188	16	8
Laying rails per mile	150	0	0
Carriage of materials (iron 152½ tons)	170	0	0
Switches and points per mile, say	60	0	0
Ballasting, average per mile	420	0	0
Average cost per mile	£2,689	8	5

7

Total miles of Railway Superstructure required.

	Miles.	Chains.
Main Line	61	16½
Windsor Branch	31	49
Add for Turnout and Station tracks	5	69½
Add to supply place of Iron lost in Bay of Fundy	1	25
Total	100 miles.	

And 100 miles multiplied by the average cost above stated, viz., £2689, 8 5 gives us the total cost of the Superstructure and Iron £268,942 1 8

There has been paid for iron rails, chairs, spikes, keys, and switches, as per table, page 25 . . . . £133,237 9 9

And on account of superstructure, under the section contracts, as at page 24 . . . . 62,132 15 6

Amount paid to Sept. 30, 1857 . . . . £195,370 5 3

Amount required to complete the superstructure and iron . . . . 73,571 16 5 . . . . £268,942 1 8

As it may be useful to know the quantity of rails, chairs, spikes, &c., still required to be ordered, I add the following Statement:

	Iron Rails.	Joint Chairs.	Inter. Chairs.	Spikes	Keys.	
					8 inch.	5 inch.
	Tons.	Tons.	Tons.	Tons.	No.	No.
Required for one mile	99	10	40	2½	650	3900
" for 100 miles	9900	1000	4000	250	65000	390000
Received at Halifax and Windsor	8057	650	2604	203.8	50027	272839
Remaining to be ordered Sept. 30, 1857,	1843	350	1396	46.2	14973	117161

(3). STATION BUILDINGS AND FIXTURES.

The Station Buildings and Fixtures at present on the Railway, are of limited extent and convenience. At Halifax the main building is used for both merchandise and passengers, and is too small for the accommodation of both when the road is extended. I have therefore in the estimate allowed for a separate merchandise building.

The buildings appropriated to the repairs of locomotives and cars are also entirely too small for the accommodation of this department, and must be largely increased. Additional machinery and tools will also be required. It is important that this department—from the want of local facilities to procure work done at other establishments—should be more than ordinarily complete. To keep a large stock of duplicate parts on hand to be ready in cases of accident is expensive, and the repair shops should be capable of supplying all that may be required in this respect. It would also be desirable that the passenger cars should be built at the work shops, the freight and insurance being heavy items on their importation.

I have allowed for erecting wood sheds, of which there are none on the road at present. It will be found true economy to have the wood kept dry and seasoned under cover.

In the Appendix will be found a tabular statement (No. 5) showing the location, dimensions, and other particulars relative to the station buildings and fixtures already built or contracted for.

There had been expended, September 30th, 1857, for station buildings, fixtures, machinery and tools—including £362 3s. 3d. paid under the Section contracts—the sum of		£9,578 4 7
For the quarter ending Dec. 31st, 1857, there was paid on account of buildings about	£3,500 0 0	
And for turntables, cranes, tools and machinery for workshops	6,000 0 0	
To complete the buildings and platforms, now under construction, will cost, say	1,000 0 0	10,500 0 0
		£20,078 4 4

For the additional buildings and fixtures required, I estimate as follows:

Richmond—	New machine and repair shop—brick or stone	1,500	0	0
"	Freight or merchandise building, and additions to present station house	1,500	0	0
"	Car house	250	0	0
"	Wood sheds, &c	600	0	0
"	Machinery and tools for repairs	1,500	0	0
Junction—	Passenger and freight building	250	0	0
"	Wood sheds, water works, and laying down turntable	500	0	0
Truro—	Passenger and freight buildings—brick or stone	1,500	0	0
"	Engine house and fixtures do	500	0	0
"	Wood sheds, tanks, and laying down turntable	800	0	0
Windsor	do do do	800	0	0
Way Stations—	Say, eight watering stations, including Bedford and Grand Lake, fitted with water tanks, wood sheds, wells, and pumps or aqueducts—average for each station £400	3,200	0	0
"	Passenger and freight buildings at the above way stations (additional)	2,500	0	0
"	Say eight intermediate or 2d class stations—making stopping places about five miles apart—average, say for buildings and platforms, £300	2,400	0	0
"	Miscellaneous, and to fit up machinery and tools in workshops	2,500	0	0
	Total	£40,378	4	7

(4). EQUIPMENT OR ROLLING STOCK.

The rolling stock at present in use on the road is as follows:

7 Locomotive Engines,
6 Eight wheel Passenger Cars,
1 " 2d. Class and Mail Car,
4 " Covered Merchandise Cars,
31 " Platform Cars,
1 Four wheel Merchandise Car,
5 Eight wheel Covered Horse Cars,
3 " Cattle and Sheep Cars,
2 Four wheel Ballast Cars,
1 Snow Plow, and 4 Hand Cars.

There are under construction in the Workshops at the Richmond Station.

2	Eight wheel	2d. Class Passenger Cars.
2	"	Covered Merchandise Cars,
3	"	Horse Cars,
5	"	Platform Cars,

Two additional locomotive Engines, which were ordered from Neilson & Co., of Glasgow, of the same size as Nos. 6 and 7 at present on the road, were lost on board the "Thomas" last fall. They were fully insured, and their place is being supplied by the Manufacturers. Six more of the same size have recently been ordered.

	£	s.	d.
The amount paid for locomotive engines up to Sept. 30th, 1857, was	£11094	17	2½
For passenger, freight, and other cars, snow plow and omnibuses	9996	12	6½
	21091	9	9
The two locomotives (Nos. 6 & 7) received since Sept. 30th cost, delivered at Halifax, say £4250 each	8500	0	0
Eight locomotive engines ordered, say	3400	0	0
Two passenger cars, received since Sept. 30th	1100	0	0
Wheels and axles, waggon mounting, &c.	4500	0	0
To fit up the locomotives and to complete the cars now building, say	500	0	0
Making the cost of the rolling stock now in use, under construction or ordered	£69691	9	9

In addition to the above, I estimate that the following locomotives and cars will be required for the effective operation of the road when completed to Windsor and Truro, viz;

4 locomotive engines, 30 tons each, at	£4500*	£18000	0	0				
5 eight wheel passenger cars, 1st class, at	600	3000	0	0				
5 " baggage and 2d. class, at	350	1750	0	0				
40 " freight cars at	175	7000	0	0				
6 " cattle cars at	175	1050	0	0				
20 " platform and lumber cars at	140	2800	0	0				
					33600	0	0	
					£103291	0	0	

(5). WHARVES.

The wharf at Halifax was built by contract, and has been in use for some time. That at Windsor was built by days labor, and is completed, with the exception of the back filling, metalling, &c.

There has been paid on account of the wharf at Halifax				£854	17	3½
And on account of the wharf at Windsor	£2769	1	5½			
To complete the latter requires 5000 cubic yards of filling, at 1s. 3d.	312	10	0			
Add for metalling, mooring rings, &c.	300	0	0			
				3381	11	5½
				£4236	8	9

* The price of these locomotives is based on the cost of the two last received at Halifax, viz., about £4250 each, including duplicate and spare parts. It is a much higher price, however, than is usually paid for locomotives of that class,

(6.) LAND DAMAGES AND FENCING.

The act authorizing the construction of the road, gives authority to the Commissioners and those acting under them "to enter upon and take possession of any lands "required for the track of the railways, or for stations;" and also to enter "upon any "lands" and take material of any kind that may be required; and provides that the monies payable for land and damages shall form a County charge, to be assessed, apportioned, and paid for, according to the relative benefits derived from the Railway by the several sections of the county. The land, therefore, occupied by the Railway, and the damages to property, have not been included in the payments made by the Board of Railway Commissioners, except in the following instances:

	£	s.	d.
Paid for a House at the Halifax terminus bought of R. Marshall........	£175	0	0
" for recording deed........	0	8	9
" for Land at African village, on which to place buildings interfered with by the Railway (conveyance to J. Morrow)........	175	0	0
" for Interest 1 year and 9 months on the above	18	7	6
" for recording deed........	0	8	9
" for Material and labor in removing and fixing up buildings at African village........	210	7	9
" to T. & L. Piers for damages to property on Bedford Basin, in accordance with resolution passed by the Legislature........	500	0	0
	£1079	12	9

Fencing. There are now built, or contracted for, 114 miles of Fence, at prices ranging from 5s. to 16s. 6d. per rod—the average price per rod being 6s. 3d. nearly, which is equal to £100 per mile.

To fence the whole of the Main line and Windsor branch, on both sides, would require 186 miles of fence, which would cost at the above average, £18,600; but it may be deserving of consideration whether there is a necessity for fencing the whole immediately. For many miles the road passes through a sparsely settled region covered with timber and underbrush, in which few, if any, cattle are pastured; and the frequency of fires in such places would endanger wooden fences. Again, on several parts of the line the embankments are made mainly of rock, with slopes of nearly one to one, which cattle will not readily attempt. I think, therefore, that three-fourths of the line is all that it may be advisable to enclose at present. To this I add an allowance of £500 for Snow fences, which on some portion of the road may be found desirable.

The fences built are known as "Post and rail,"—the posts generally of hackmatack and the railings of spruce. Stone is very abundant on many parts of the line, covering, indeed, the whole surface, and rendering it difficult to erect a wood fence. In such places I would give the preference to rough stone walls, which would cost but little more in the first instance, and be far more durable.

Estimate.

	£	s.	d.
Say 140 miles of fence, including that already built, at £100 per mile	£14000	0	0
Snow fences........	500	0	0
Add Land and damages, as above........	1079	12	9
	£15579	12	9

	£	s.	d.
Amount paid on account of fencing........	5044	10	5
" " for land and damages........	1079	12	9
	£6124	3	2

Table No. 6 in the appendix is a statement of the contracts for fencing.

(7). SALARIES AND INCIDENTAL EXPENSES.

The amount expended under this head, during the time the road has been under construction, is as follows:

Salaries of Commissioners paid by the Receiver General	£5696	13	1
Incidental expenses paid by the Rec. Gen. (Expense account)	392	9	11
Salaries paid by the Commissioners	1403	5	11
Incidental expenses paid by the Commissioners	1794	17	7½
Amount paid to September 30th, 1857	£9287	6	6½
To which I add, on the assumption that it will require another twelve months to put the work in effective operation	3500	0	0
Total	£12,787	6	6½

(8). ENGINEERING AND SURVEYING.

The expenditures under this head up to Sept. 30th, 1857, have been as follows:

Salary of the Chief Engineer paid by the Receiver General	£3281	5	0
Salaries and expenses of the Engineer Department, including wages of inspectors and time-keepers, paid by the Railway Commissioners	9490	14	6½
	£12771	19	6½
To which add for twelve months	5,000	0	0
Total	£17771	19	6½

(9). OFFICE EXPENSES.

The expenditures have been as follows:

Postages and telegraphs	£201	5	5½
Printing and advertising	561	9	8½
Office expenses—furniture, fuel, &c	1170	5	3½
	£1933	0	5½
Add for 12 months	600	0	0
Total	£2533	0	5½

(10). CONTINGENCIES.

There have been classed under this head the following expenditures:

Law Charges	£243	15	0
Commissions and agencies	333	2	6
Home Insurance	180	10	0
Interest	765	3	2½
	£1522	10	8½
Add for 12 months	*3000	0	0
	£4522	10	8½

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*£1300 of this is for interest due Baring Brothers & Co., December 31st, 1857.

(11). MATERIALS AND PLANT.

Under this head have been embraced ballast waggons, wheel-barrows, scows, and road tools; also, items of lumber, timber, cement, iron, steel, oil, &c., which have not been charged to any other than General account—neither the books nor vouchers showing what disposition has been made of them. The items are as follows:

Plant Account—Waggons, wheel-barrows and scows, derrick, road tools, gunpowder, &c.	* £830	5	5½
Lumber and timber	748	8	3
Portland cement	20	12	4
Iron, steel, nuts and screws	1430	11	5½
Oil, and cotton waste	71	13	3
Miscellaneous	59	15	3
	£3170	5	9
Add for 12 four wheel ballast or gravel cars, for making repairs, at £75	900	0	0
" for tools, &c.	600	0	0
	£4670	5	9

(12). INTEREST ON DEBENTURES.

The amount paid for Interest on Debentures, &c., up to September 30th, 1857, as entered on the books of the Receiver General, is	£29,634	10	9
Add for accrued interest and the interest falling due for the next 12 months	45,000	0	0
	£74,634	10	9

From this account there might be deducted the net profits of working the road up to the time of its entire completion, but in the uncertainty of what the sum may be, I prefer to leave it, to go towards meeting depreciation of rolling stock and such claims of the contractors as may be recognised.

(13). TELEGRAPH.

In the Estimate, I have allowed £3500 for building and equiping a Telegraph line for the use of the road. I am of opinion, however, that this expenditure may, at least for the present, be deferred. The expenses of operating a railway telegraph are by no means inconsiderable, as, to derive from it full benefit, it must communicate with every station on the line and be conducted by a man of intelligence, always at his post, and who is capable of directing and regulating the trains. A very large traffic, under proper regulations, can be conducted on a single track without such aid. If an arrangement can be made with existing lines, or if private enterprise should desire to establish one along the route of the railway, every facility and encouragement should be given. To maintain and operate a telegraph properly, would probably cost not less than £500 per annum.

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* Of this amount £20 2s. 6d. is debited to the War Department for gunpowder barrels returned in 1856, which remain unpaid.

SUMMARY.

Collecting the various items of the Estimate together, we obtain the following results—of the Amount Paid, the Amount Required to complete the road, and the Total cost of the Road and Equipment complete :—

	Amount paid to Sept. 30, 1857.			Am't. required to complete the road.			Total cost of Road and Equipment.		
1. Grading, masonry, & bridging	372550	4	8	99468	11	3½	472018	15	11½
2. Iron and Superstructure.....	195370	5	3	73571	16	5	268942	1	8
3. Station buildings and Fixtures	9578	4	7	30800	0	0	40378	4	7
4. Locomotive Engines, and Cars	21091	9	9	82200	0	0	103291	9	9
5. Wharves { Halifax £854 17 3½ Windsor 3381 11 5½	3623	18	9	612	10	0	4236	8	9
6. Land Damages and Fencing..	6124	3	2	9455	9	7	15579	12	9
7. Salaries & Incidental expences	9287	6	6½	3500	0	0	12787	6	6½
8. Engineering and Surveying..	12771	19	6½	5000	0	0	17771	19	6½
9. Office expenses...........	1933	0	5½	600	0	0	2533	0	5½
10. Contingencies............	1522	10	8½	3000	0	0	4522	10	8½
11. Materials and Plant........	3170	5	9	1500	0	0	4670	5	9
12. Interest on Debentures......	29634	10	9	45000	0	0	74634	10	9
13. Telegraph..............	....			3500	0	0	3500	0	0
Totals............£	666657	19	11	358208	7	3½	1,024,866	7	2½

The above estimate includes both the Main line and the Windsor branch; but as it may be satisfactory to know the cost of each separate, I add the following statements:—

Statement shewing the approximate cost of the Main line—61$\frac{2}{10}$ miles.

	Total Cost.			Cost per mile.		
Grading, masonry, and bridging, of the Main line, as per Tabular statement, page 24.......	£282,209	16	0½	£4611	5	5
Wharf at Halifax.............................	854	17	3½	13	19	4
To which add, at the average cost per mile, items 2, 3, and 4, and 6 to 13, as found by the above summary, and we obtain.................	361,799	11	7	5911	15	2
Making the Totals for the Main line....	£644,864	4	11	£10,536	19	11

Statement shewing the approximate cost of the Windsor branch—31$\frac{6}{10}$ miles.

	Total Cost.			Cost per mile.		
Grading, masonry, and bridging, as per Tabular statement page 24..........................	£189,808	19	11	£6606	12	3
Wharf at Windsor.............................	3,381	11	5½	107	0	3
Add, at the average cost per mile, items as on main line..................................	186,811	10	11	5911	15	2
Making the Totals for the Windsor Branch..	£380,002	2	3½	£12,025	7	8

The average cost of the Main line and Windsor branch, taken together, is £11,043 16s. 4d. per mile.

In the estimate, I have intended to provide not only for the expenditure necessary to open the road for traffic, but to complete the same and erect such station buildings and furnish such an amount of rolling stock, as will be found requisite for doing a profitable business. Some portion of this expenditure may be postponed until the whole of the road is in working order—such as part of the fencing, station accommodation, telegraph, widening embankments, and a few other items. I have meant neither to omit nor include anything but what will be found actually necessary before the construction account of the road can be closed.

REVENUE OR TRANSPORTATION ACCOUNT.

In making up and classifying this account, some difficulty has been experienced from the vouchers not always specifying the nature of the services rendered or the labor performed,—an imperfection continued to the present time.

For the year 1855, the running expenses were not separated from the construction account until the close of the year, and had to be arrived at, on some items, by estimation. The repairs of the road for that year, amounting to £410 14 6, were charged to construction or general account; I have not deemed it necessary to transfer them, although they were properly chargeable to working expenses, and would reduce the net earnings by that amount. It is rarely ever the case that a few miles of a long road opened for travel pays more than the expenses of running.

I have not attempted materially to modify the classification made on the books of the working expenses, although it is by no means such as I would have preferred, but the items consisting mainly of labor, they cannot now be apportioned in any other way.

In going over the vouchers, some items of expenditure connected with the running of the road, such as advertising trains, printing tickets, &c., were found charged to other accounts. These I have transferred to the working expenses, which reduces the net receipts below the return of the Commissioners for the year 1855, £25 7 9½, and for the year 1856, £54 9 9½. A careful scrutiny of the Schedule would, perhaps, show that there are other items for salaries of superintendents, and station masters, watchmen at depot, and road crossings, which might also, with propriety, be transferred, but as the parties were at the same time performing duties connected with the construction of the road, it would be only a portion of their salaries that would be fairly chargeable to running expenses,—an apportionment which could only be properly made at the time, with a knowledge of all the facts. There are also some items for coal, oil, and cotton waste, which have been charged to other accounts, a portion of which may have belonged to running expenses, but cannot now be separated: Thus we have oil and cotton waste in the years 1855 and 6 to the amount of £134 11 10 charged to rolling stock, and £71 13 3 to construction or General account.

It may be proper to state that in the revenue account of 1855 for freight, as entered in the books and in the annual report of the Commissioners, the balance of the account only is given; the charges for loading and unloading amounting to £31 11 10 are not included in the expenses, but the revenue is reduced by an equal sum. This, of course, does not affect the general result of net earnings, but as it is an improper mode of rendering the account, and as in Schedule A, we have given the items of expenditure, a corresponding sum has been added to the revenue side of the account.

The following Table exhibits at one view the results arrived at, as to the receipts, the working expenses, and the net earnings, for each year, of the portions of the road in operation:

Transportation Account.

	1855. Feb'y., 4 miles July, 8 miles in Operation.			1856. 8 miles in operation.			1857. (9 months,) 22½ miles in operation.		
Receipts from Passengers	1659	13	2½	2401	0	8	3298	5	5½
" " Freight	126	9	11½	577	1	10½	1142	19	0½
" " Mail and Mail Coaches	0	0	0	162	1	3	195	7	6
" " Conveyance of Troops	0	0	0	25	0	0			
" " Storage	0	0	0	12	8	4	12	9	3
" " Freight of Iron	38	9	4	822	0	11	480	0	4½
" " Contrac'rs, for use of Loco. Eng.	105	0	7	107	10	0	1149	17	6
Total Receipts £	1929	13	1	4107	3	0½	6278	19	1½
The Expenses were:									
Locomotive charges	329	18	4½	651	17	5½	903	15	6
Traffic charges	94	2	10	285	0	6½	645	5	2½
Repairs of Stock (Loco. and Cars)	241	13	9	677	0	4½	515	15	4
Wood and Coal	237	11	0	325	11	7	698	16	0
Oil and Cotton waste	101	18	11	76	17	3	318	1	5
Upholding or Maintenance of Way	0	0	0	618	14	5½	697	9	0
Salaries and Miscellaneous	47	17	9	418	15	7½	360	17	1
Total Expenses £	1053	2	7½	3053	17	2½	4139	19	6½
Net Receipts £	876	10	5½	1053	5	10	2138	19	7
Number of way passengers / " of through passengers	30563			50844					
" tons of freight moved									
" of Miles run by Engines	8098			17271			22432		
Receipts per Mile run	4s. 9d½.			4s. 9d½.			5s. 7d.		
Expenses per mile run	2s. 6d.			3s. 6d½.			3s. 8d½.		
Gross rec'ts. per mile of road in operation				£513	8	0	£279	1	4
Net receipts per do...do....do				£131	13	3	£95	1	8

Remarks on the Plan of Construction and the Present Condition of the Works.

On the portion of the Main Line completed the road bed is generally in good condition. The embankments having been made mostly of rock, not much settlement or shrinkage has taken place, but there are some of them, occasionally, scant in width and require filling out. The slopes, also, of earth cuttings should be reduced to 1½ to 1, otherwise there will be liability to interruption to the travel and business of the road. There are several places where the rails have not been properly bent, nor the outer rail elevated to suit the curve, matters of much importance when there are curves of small radii and a high rate of speed is to be maintained.

On the Windsor branch much remains to be done to perfect the road bed,—side ditches require to be opened, points of rock to be removed, and the side slopes of the excavations dressed and trimmed to prevent boulders and roots of trees from falling down and obstructing the road. Many of the cuttings and embankments are of less than the contract width. The clay embankments, which have recently been made, may be expected to settle largely by next spring, and will require a considerable amount of filling to make them good. The rails also, in many places, are imperfectly laid, not bent to the curves, and require adjusting. The hurried manner in which the road has been brought into use, may excuse the defects at present, but they ought to be corrected at an early day.

The masonry of the viaducts and bridges, on both the Main line and the Windsor branch, is of a very superior character, more so, in fact, than is usually met with on public works; and where wooden superstructures are used they are of abundant strength.

The wrought iron girders used in the more important viaducts and bridges were manufactured by Fairbairn & Sons, of Manchester, England, forwarded in sections, and put together on the works. The greatest spans in which they are proposed to be used are in the bridges across the 2nd Shubenacadie and the Stewiacke rivers, which have each openings of 100 feet. These bridges are not yet complete. The girders, I am informed by the Engineer, are proportioned to sustain a weight of seven tons per foot without breaking, which is ample. I would, as a matter of precaution, recommend that they, and, in fact, all bridges, be subjected to a proper test previous to opening the road for the transportation of passengers.

Culverts and Drains.—The masonry of this class is of a fair quality, but under some of the heavy embankments arch culverts of a larger opening would have been preferable. Some of them look small in size for the area of country drained through them. On section No. 11 of the Main line, no masonry has yet been constructed, and the quantity in the schedule appears to me insufficient. Truro Mill Brook is crossed four times, and should have a water way of not less than 25 feet. The waters of this brook are reported to spread over the meadows, in high freshets, to a depth of 3 to 5 feet, and, as the flow will necessarily be obstructed by the railway embankment, sufficient opening should be left for the passage of the whole body of the water. In the estimate I have provided for about double the quantity of masonry and bridging shown on the schedule. On the Windsor branch a few wooden culverts were permitted to be used on the western end of the line, they are poor substitutes for stone work.

Ballasting.—The specifications call for ballasting to a depth of one foot and a width of 14 feet, both in excavations and on embankments, of clean round gravel, or stone, broken, so that "each piece will pass through a ring, each way, two inches in diameter." It is required to be "well beaten and compressed with a double-handed beater," and made smooth and uniform for receiving the sleepers; and, after the rails have been permanently laid, an additional quantity of ballast is required to "be well rammed round the sleepers, upon which shall be spread a stratum of clean gravel six inches thick."

This specification, if carried out, would make a very perfect road, but it has not received much attention, and, not unfrequently, the sleepers rest directly on stones of considerable size, and in other cases the ballasting is of inferior material, being composed, more or less, of argillaceous soil, subject to be acted on by frost. To have complied with the specification literally would have cost the contractors at least £100 more per mile than they have expended.

Railway Superstructure.—The plan of the Railway superstructure adopted has already been refered to at page 5. The plan has been found to answer well in Great Britain, where the temperature is comparatively uniform and moderate, and the ground not liable to be frozen to great depths,—but in the northern portion of the United States, where the same plan was tried, the cast iron chairs were found liable to break during cold weather, and as they, besides, added largely to the cost, the form of the rail was modified so as to dispense with their use, except as a connecting plate at the ends of the rails, and even for this purpose wrought iron is now mostly used. Wooden side keys, from the great alternations of heat and cold, were found to shrink and work loose, and have also been abandoned.

The plan of rail now almost universally adopted in the States is that known as the T or American pattern, which requires no chairs, unless the plate placed under the ends of the rails can be termed such. This plan, or a modification of it, has been adopted on the Great Western, the Grand Trunk, and other Railways in Canada, also on the New Brunswick Railways. It admits of much more ready adjustment, costs considerably less per mile, and appears to satisfy the requirements of climate and economy on this side of the Atlantic, better than any other. That you may be enabled to judge of the comparative economy of the two plans, I submit the following estimate:

Estimate of Cost of a Mile of Railway Superstructure laid with the T rail, at the prices paid for material and labor on the Nova Scotia Railway.

Rail, weighing 63 pounds per yard, or 99 tons per mile, at £12 per ton, delivered	£1188	0	0
3¼ tons of wrought iron joint plates, at £20 per ton, delivered	65	0	0
2½ tons of spikes, at £17 7s. 6d	43	8	9
2060 sleepers, delivered on the line of railway, at 1s. 10d. each	188	16	8
Laying rails per mile	150	0	0
Carriage and distribution of materials (iron 105 tons) per mile	140	0	0
Switches and crossings per mile	60	0	0
Ballasting per mile	420	0	0
Cost per mile	£2255	5	5

The cost of your present superstructure, as at page 25, is £2689 8s. 5d., making a difference in favor of T rail of £434 3s. per mile.

With your present rail I anticipate that there will be some difficulty from the shrinkage of the keys, allowing the rails to slip endwise, particularly on the heavy grades, there being nothing but the friction between the keys and rails to prevent the latter being drawn apart at the joints. In some cases this is quite perceptible now, and with heavier locomotives the difficulty will be increased. It may be obviated to some extent, should it be found necessary, by drilling a hole through one of the intermediate chairs attached to each rail, and inserting an iron pin or bolt, passing through both chair and rail.

Locomotive Engines.—Table No. 7, in the Appendix, shows the number of locomotives in use on the railway, the weight of each, the capacity of the tender, diameter and stroke of cylinder, connection, number and diameter of drivers, with the names of the builders.

As a number of additional locomotives will soon be required I propose briefly to investigate the power and capacity of those on the road with a view to determine whether they are adapted to the grades and to the business anticipated.

No. 1 locomotive or "May Flower," has 15 inch cylinders, weighs 19 tons, and has about 12 tons resting on the driving wheels. No. 2 and 3, named respectively, "Sir Gaspard" and "Joseph Howe," are alike in dimensions, have 12 inch cylinders, weigh 15½ tons each with wood and water, and have about 7 tons on the drivers. No. 4 and 5, Ballast tank engines, have 10 inch cylinders, and weigh 9 tons with wood and water. No. 6 and 7 have 16 inch cylinders, weigh 25 tons each, and have about 15 tons resting on the drivers.

The power of a locomotive to draw a load, without reference to the speed, depends upon the weight resting on the driving wheels—one-sixth part of which weight, in an ordinary state of the rails, may be taken as the measure of the adhesion, or locomotive tractile power. When the rails are in the best state, the adhesion would be slightly increased, but when they are partially wet it would be reduced, and when covered with snow or ice it would be reduced to less than one-third. When the adhesion is not sufficient, the wheels will slip on the rails, and, although the engine may turn the wheels, the load will not move forward.

With No. 2 and 3 locomotives, 7 tons or 15,680 lbs., rest on the driving wheels,—one-sixth part of which gives 2,613 pounds as their tractile power; and, the friction of cars on a railway being about 8½ lbs. per ton, it follows that these engines could move (2613 ÷ 8½) 307 tons on a level.

On an ascent, the gravitation of the load, as well as the friction of the cars, has to be overcome. The friction is a constant quantity per ton; but, the resistance from gravitation increases with the angle of ascent. On an inclination of 20 feet per mile the gravitation of one ton is $\left(\frac{2240 \times 20}{5280}\right) = 8\frac{1}{2}$ nearly, which, added to the friction, makes 17 lbs. So that to draw a load up an ascent of 20 feet per mile requires double the power needed to draw it on a level. It must not be inferred from this, however, that an engine will draw half the useful load up such ascent that it would draw on a level; for in moving up the ascent, the resistance from the gravitation of the engine, and tender when there is one, must be deducted from the power that was available on the level to carry useful load. The engines referred to having no separate tenders the gravitation of their own weight only has to be deducted, which is (15½ tons x 8½) =131.75 lbs., which deducted from their power on the level (2613—131.75) leaves 2481.25 lbs. as their available power on an inclination of 20 feet per mile; and (2481.25 ÷ 17) gives 146 tons as the gross load they are capable of drawing up this inclination. But not to go further into detail I have prepared the following table which gives the gross load, and net or useful load, which No. 2 and 3, and No. 6 and 7 locomotives, are capable of drawing on a level, and on ascending gradients of 20, 40, 60, $64\frac{8}{10}$ and 71½ feet per mile,—the two last being the maximum and ruling gradients on the Main line and Windsor branch, respectively.

The useful load is assumed at five tenths of the gross weight of the cars and load.

	Locomotives, No. 2 & 3.		Locomotives, No. 6 & 7.	
	Gross load in Tons.	Useful load in Tons.	Gross load in Tons.	Useful load in Tons.
On a level........................	307	153	658	329
On an ascent of 20 feet per mile	146	73	310	150
" " 40 " "	92	46	192	96
" " 60 " "	66	33	135	67½
" " $64\frac{8}{10}$ " "	61	30½	125	62½
" " 71½ " "	56	28	112	56

We find then that with No. 2 and 3 locomotives, the drawing of 61 tons gross or 30½ tons net is the limit of their power on the Main line, and 56 tons gross or 28 tons net the limit of their power on the Windsor branch; and with No. 6 and 7 locomotives, 125 tons gross or 62½ tons net on the Main line, and 112 tons gross or 56 tons net on the Windsor branch.

The weight of N[illegible]1 locomotive being intermediate to those estimated, the load it is capable of carrying would be in proportion. No. 3 and 4 have too small steam power and are too light to be available for the purposes of general traffic; they will be useful, however, for making repairs, and in assorting trains at the terminii of the road.

The power of these locomotives, excepting No. 6 and 7, is entirely too small to allow of carrying freight at moderate rates, and from the nature of the traffic expected,—agricultural products, timber, cord wood, plaster, &c.,—it is important that the road should be capable of carrying, not only at moderate, but at low rates, as its ability in this respect may determine whether the surplus products of the counties bordering the Basin of Mines will be sent to Halifax by railway or be shipped by water. I would recommend that all new engines ordered should have from 18 to 20 tons weight resting on the driving wheels, and have steam power sufficient to work up to their full adhesion. Such engines would be capable of carrying on the $64\frac{8}{10}$ feet grades 176 tons gross or 88 tons net, and on the $71\frac{1}{4}$ feet grades 162 tons gross or 81 tons net. Heavy engines are objectionable on many accounts, but with the grades on this road they become a necessity.

On the Erie Railway in the state of New York, 445 miles in length, 245 continuous miles of which has no grade in the direction of the greatest trade over five feet per mile, and with maximum grades of 60 feet per mile, out of 203 locomotives owned by the company, 92 have more than 18 tons weight on the driving wheels, and 20 have from 20 to 32 tons, the latter being used only on the portions of the road where the steepest inclinations occur. On your road there would be no economy in using heavy locomotives on the steeper grades only.

Switches and Crossings.—The switches and crossings of a Railway are of more importance than their cost intimates. All experience shows that accidents are more liable to occur at them than at any other points upon a road. Those in use on this railway are made on the English plan, which answers well, and is, perhaps, safer than any other for summer use, but in this climate, in the winter time, the movable rails will be liable to get blocked up with ice and snow and cannot be depended on as *self-acting*, and will require much care and attention. No greater number of them than is found actually necessary should be allowed to branch from the Main track.

Rolling Stock.—In the estimate, I have allowed for what ordinarily would be considered a moderate equipment, but, as the amount required depends entirely on the business to be accommodated, it can readily be increased should the business warrant.

The passenger and freight cars on the road are of approved forms and substantially built. I observe one thing, however, in connection with them which perhaps it might be advisable to correct. The wheels under the passenger cars are of cast iron, while those under the freight cars are of wrought iron. The latter are much more expensive, and presumed to be safer and stronger, and as passenger trains travel at higher rates of speed than freight trains, and more serious results attend any failure of their running gear, it is desirable that the best should be placed under them. Cast iron wheels are mostly used in the States, but more from motives of economy than from any opinion of their being equal or superior to those of wrought iron.

Station Grounds.—At Halifax the station grounds are much cramped from the vicinity of the rising grounds and from the line of the Railway being mostly on a curve. They are not well adapted to accommodate a large amount of business. This terminus has also the disadvantage of being at a considerable distance from the centre of business of the city, which will cause delay, inconvenience and expense to the business of the road,—but, on the other hand, a large expenditure would be required to continue the road along the water front and procure the necessary station grounds. The wharf accommodation at this station is of limited extent, and in the event of a large business being done over the road, in carrying freight to be shipped, it may be found expedient to increase it. For the present, however, it is sufficient. At Windsor and Truro the station grounds are ample and convenient.

Many of the vouchers are very imperfect; a few are entirely without date of any kind, and it is necessary to refer to the books to discover even in what year they were paid,—others are very inexplicit as to the consideration for the payments, also as to what account they properly belong. Thus, in the quarter ending December 31st, 1855, voucher No. 363 is a receipt of John Kennedy for £8 for "advance for labor," without date of any kind, month or year; and voucher No. 1, for the quarter ending March 31st, 1857, is a receipt of Wm. J. Wiswell for "£100 on account," also without date, and there is no date to the bill on which it was part payment, amounting to £689; vouchers 125 and 134, March quarter, 1857, are returns of labor on contract No. 3, and for cutting wood and pumping water, amounting to £75 4s. 1½d., also without date of any kind. Sometimes the vouchers do not correspond as to date with the entries in the books. Thus voucher No. 134 March quarter, 1856, is a receipt of E. Niford for £4 4 4½ for 6¼ cords of wood, dated as received payment, Nov. 6th, 1855, is not entered in the journal as having been paid until Feb. 28th, 1856. Voucher No. 219, June quarter, 1855, is John Gunn's Bill against D. Cameron, for balance due on making ten waggons, amounting to £5 15 0 receipted as having been paid Jan. 24th, 1855. This voucher has not even evidence on its face that it was chargeable against the railway or Commissioners,—their names not appearing in the bill.

Some of the vouchers which contain a number of items chargeable to different accounts, do not show how they were distributed. In bills of this kind, unless the distribution made is noted at the time, it would be difficult in many cases to select the same items, many standing on debatable ground, particularly between what is properly chargeable to construction and to working expenses: Latterly, however, the distribution has been more generally noted on the voucher. Another of this class which has been extensively practised, is the first charging bills, or cash paid, to one account, and afterwards transferring some portion of the account, and sometimes without specifying the items, to some other. In September quarter, 1856, £345 6 3 is paid T. Hanright on account for erecting girders of Sackville bridge, per vouchers 112 to 121, and in the same quarter £27 10 0 of the amount is transferred and charged to Richmond station, and £20 16 7½ to Sackville station. The transportation expenses for 1855 were largely made up in this way, and probably neither the Commissioners nor book-keeper could now say in many instances what the items were that were thus transferred. In the transportation accounts of 1856 full one-third of the amount originally debited to "Locomotive charges" is transferred to other accounts. In this connection, however, it is but just that I should state that I discovered nothing from the books or vouchers but that the intention was to make a fair and proper distribution; although instances occur where it is evident that the whole or a portion of some bills should have been charged to other accounts, thus:

In the quarter ending Dec. 31st, 1855, £88 19 4 is paid to Johnston & Dimock on account of "Fencing," per vouchers 245, 246, and 247, and in the same quarter £134 15 0 is paid them on account of "New Engine House," which sums, amounting to £223 14 6, are entered on Johnston & Dimock's account in the ledger as transferred to "New Store;" but they are both, in fact, charged to "New Engine House," and afterwards transferred to "Station House and other Buildings" account. In June quarter, 1855, voucher No. 221, Commercial Wharf bill for wharfage on chairs, £4 4 0, spikes, 8s. 10d, and wheels and axles, £1 9 6,—together £6 2 4,—is all charged to rolling stock, while the latter sum only was properly chargeable to that account. In March quarter, 1856, voucher 166, bill for lumber for Sackville bridge, is charged to Richmond Station. In March quarter, 1857, Joseph Mitchell's bill for wharfage of 30½ tons Bridge Iron, is charged to "Iron Rails;" and in December, 1855, T. Hanright's receipt for £27 10 0 for erecting Freight Shed at Sackville Station, is charged to Sackville Bridge. Entries like these show great carelessness in making up the books.

Payments are frequently made on account of several contracts, when separate accounts have already been opened. Thus: D. McDonald is paid, per voucher No. 38, September quarter, 1857, "£3,000 on account works No. 2 and 5 Windsor branch," which sum of course cannot be charged to either contract; and in the same quarter S. Sutherland & Sons are paid "£2,700 on account," being part of the per centage retained on three sections, viz., 7, 9 and 10, which must make numerous transfers and entries necessary in order to distribute and charge to the proper accounts. Of course, with such a system of making payments, when neither the engineer, commissioners, nor contractors can know how much has been paid on any particular section, errors will be likely to occur,—and we accordingly find in the quarter ending December 31st, 1855, that McDonald & Simpson were paid on engineer's estimate, per voucher No. 345, "£1,439 on account of contract for grading section No. 5, Windsor branch," but this, by mistake, is charged on the books to contract No. 2, Windsor branch, and so remains. In March quarter, 1857, vouchers 81 and 82, are engineer's estimates in favor of Johnston & Blackie for "£3,064 on account of work done on contract No. 3, Windsor branch,"—but this sum, on the books, was charged to contract No. 3, Main line, and closed up Johnston & Blackie's account on that section, which was charged off to "construction" or General account, June 30th, 1857. But this sum was not payable on that work, and had to be disenterred from the construction account and charged to No. 3, Windsor branch. In the same quarter, voucher No. 76—D. McDonald's receipt for "£1,000 on account of 10 per cent, on contract No. 5, Windsor branch" is charged on the books to McDonald & Simpson's general account.

As shewing the difficulty of making up an accurate statement of the cost, under distinct headings, from the books, and in explanation of the amounts given in this report not always corresponding with the Ledger entries, I will cite one or two instances: In May, 1854, a bill of £5 7s. 6d. for drawing tables and trestles is charged to "surveying," which, with the ordinary latitude given to engineering and surveying expenses, was a proper classification. In September, 1854, however, it is transferred to "office furniture" account. In December to "office expenses,"—and in the same quarter to "permanent way," which last account at a later date is transferred to "construction." From the wanderings of this small item it is evident that the accountant did not know well what to do with it; but in the following instance I can see no object in making the entry: Voucher No. 26, March quarter, 1857, J. Bowes and Sons bill, for printing 50 schedules and 100 bills of work to be let, is charged to contract No. 9 in place of being charged to printing and advertising account. There are also numerous cases of salaries paid to inspectors, time-keepers, &c., being charged to particular sections or contracts—but not on contractors account,—and being afterwards charged to construction, do not appear in the books either against salaries or engineering.

The accounts would be much simplified, and entries in the book largely reduced, by adopting monthly, in place of weekly, pay rolls, for the employees. I believe there would be found to be no hardship or inconvenience in this, judging from experience on other roads.

By having separate pay rolls and returns for the different departments of construction and repairs, upholding, locomotive charges, traffic charges, &c., would also greatly simplify the accounts and reduce the number of entries. These pay rolls and returns should be made on printed forms, being the only way by which simplicity and uniformity can be obtained. For the numerous small payments which are made on account of labor, wood, and materials—not entering into the regular pay rolls or returns—printed blanks also should be used, and all vouchers should not only specify, when for labor, the nature of the services performed, and when for materials, the weight, quantity, or the amount of each item, with the price, but designate on their face the distribution, or account to which the same has been charged. Many bills are now made out for salaries and labor without specifying the nature of the services or labor performed.

I have in preparation a number of blank forms, more especially with reference to the working department of the road, which will be submitted at an early day.

Every facility and assistance has been afforded me by the Chief Engineer, in obtaining the data as relates to the characteristics of the road, and otherwise, when the information was in his power; but as he keeps no general account of the expenditures or cost of the railway, mostly all the information of this kind has been derived from the books kept in the Commissioners office, and from the quarterly accounts and vouchers rendered to the Financial Secretary. In fact, I have relied mainly on the vouchers,—the numerous transfers and cross entries rendering it tedious and difficult to make out the cost under any head of expenditure from the books, and even after arriving at a result there is no certainty that the whole is embraced.

It may be proper to state, that I consider the Engineer Department of the road as having been organised on too limited a scale, originating, no doubt, in the laudable desire of economy, but in this it is quite possible to go too far. The force employed has not been sufficient to give the requisite levels and stakes during the progress of the work, and we consequently find, at several places, the grading out of line, excavations and embankments too wide, and at others not wide enough, improper ballasting used, and other matters of detail imperfectly executed. Some of the bogs and lakes which have swallowed up such large quantities of material, could have been partially or wholly avoided, and no doubt would have been, had proper soundings been taken to determine their depths on the original surveys. The services of one or two well qualified assistant Engineers in addition to those who have been employed on the road, to have given a personal superintendence to the work, would have saved large expenditures at many points—expenditures which, although nominally borne by the contractors, have generally in the end to be made up to them in the shape of allowances or otherwise. The duties of Chief Engineer are such, in the office, as prevents his spending much of his time upon the line during the construction of a road.

Table No. 8 in the appendix is a list of the present officers and employees, their duties and compensation. Table No. 9 is a comparative statement of the average cost per mile of the Nova Scotia railway, and of the Railways of the State of New York.

Accompanying this report are profiles of the Main line from the Junction to Truro, and of the Windsor branch, which were furnished by the Chief Engineer. I have had marked on them the grades in feet per mile, also the position of the several viaducts and bridges. On the portion of the Main Line under construction, the cuttings and fillings are coloured, so as to exhibit the progress made in the work.

In making up Schedule A., it was found convenient to defer entering some of the Invoices of iron, until such time as the distribution of rails, chairs, &c., had been made in the accounts. This makes an apparent difference in the expenditure for some quarters from that shown on the books, but I have appended the check balances which show the items carried forward. They are of no value, however, further than as shewing that the schedule agrees with the accounts rendered to the Financial Secretary. This schedule has been compiled at no inconsiderable expense of labor, being the result of a careful examination of each separate voucher or evidence of payment from the commencement of the work, and it is believed that when taken in connection with this report, will furnish all the information as to the expenditures which can be reasonably expected. To Messrs. James G. Boggs, Adam C. Fife, and Charles M. Nutting, who have assisted in making it up, I am indebted for the perseverance with which they have devoted themselves to the work.

I have the honor to be,
Sir,
Your most obedient Servant,
JAMES LAURIE,
Civil Engineer.

NOTE.—Since submitting the foregoing report, I have been informed by the Hon. the Receiver General, that the vouchers referred to as missing or mislaid have been found. I am also informed, that of the sleepers of which I could get no account, the larger portion are on section 5 on the margin of Long Lake, north of the Windsor junction.

J. L.

APPENDIX.—(TABLE No. 1.)

TABLE OF GRADIENTS ON MAIN LINE FROM HALIFAX TO TRURO.

Distance from Halifax in Miles		Length of Grade in Miles.		Inclination of Grade 1 in.	Grade in feet per Mile.	Ascent of Grade in Feet.	Descent of Grade in Feet.	Elevation abv'e Tide Water.	LOCALITY.
Ms.	Chs.	Ms.	Chs.		FEET.	FEET.	FEET.	FEET.	
								10.4	Halifax.
	38		38	943	5.6	2.7		13.0	
	78		40	264	20.0	9.8		22.8	
2	0	1	2	366	14.4		14.9	7.9	
2	34		34	Level.				7.9	
3	26		72	1650	3.2		2.9	5.0	
4	26	1	0	413	12 8	12.7		17.7	
4	73		47	330	16.0		9.7	8.1	
5	40		67	550	9.6	8.0		16.1	
6	45		65	412	12.8		10.5	5.6	
6	70		25	Level.				5.6	
7	65		75	150	35.2	32.9		38.5	
8	0		15	Level.				38.5	Bedford Station.
9	40	1	40	81.48	64.8	97.0		135.5	Lily Lake.
10	11		51	Level.				135.5	
10	53		42	440	12.0		6.3	129.2	
11	21		48	Level.				129.2	
11	70		49	500	10.6	6.4		135.6	Windsor Junction.
14	26	2	36	660	8.0		19.6	116.0	
15	41	1	15	250	21·1		25·0	91.0	
17	56	2	15	Level.				91.0	
18	21		45	660	8.0	4.5		95.5	
19	56	1	35	330	16.0		23.0	72.5	
20	3		27	Level.				72.5	Fletcher's Station.
20	43		40	440	12.0	6.0		78.5	
21	3		40	440	12.0		6.0	72.5	
21	31		28	Level.				72.5	
22	13		62	264	20.0		15.5	57.0	
22	21		8	Level.				57.0	Grand lake Station.
22	60		39	330	16.0		7·8	49.2	
22	68		8	Level.				49.2	
23	61		73	388.2	13.5	12·4		61.6	
24	32		51	351	15.0		9·6	52.0	
25	22		70	253.9	20·8	18.2		70.2	
25	47		25	Level.				70.2	
26	31		64	220	24.0		19.2	51.0	Shubenacadie river [Upper.
26	73		42	330	16.0	8.3		59.3	
28	55	1	62	471.43	11.2		19.9	39.4	
29	43		68	550	9.6	8.2		47.6	Nine Mile River [Road.
30	3		40	330	16.0	8.0		55.6	
30	53		50	1320	4.0		2.5	53.1	
31	23		50	600	8.8	5.5		58.6	
32	21		78	550	9.6		9.3	49.3	Barney's Brook.
33	33	1	12	126.92	41.6	47·9		972.	
34	3		50	137·5	38.4		24.0	73.2	
34	43		40	330	16.0		8.0	65.2	
		34	43			288.5	233·7		

Distance from Halifax in Miles		Length of Grade in Miles.		Inclination of Grade 1 in.	Grade in feet per Mile.	Ascent of Grade in Feet.	Descent of Grade in Feet.	Elevation above Tide Water.	Locality.
Ms.	Chs.	Ms.	Chs.		Feet.	Feet.	Feet.	Feet.	
34	43					288.5	233.7		
35	28		65	200	26.4		21.5	43.7	
36	0		52	330	16	10.3		54	
37	13	1	13	275	19.2		22.5	31.5	
37	30		17	Level.				31.5	Holdsworth's mead'w
38	65	1	35	173.68	30.4	43.7		75.2	
39	52		67	169.23	31.2		26.1	49.1	Truro road at Nelson's
40	0		28	170	31.1		11	38.1	Shubenacadie River, [Lower.
42	34	2	34	Level.				38.1	
43	48	1	14	132	40	47		85.1	
44	13		45	264	20		11.3	73.8	Stewiacke Road.
44	26		13	Level.				73.8	
44	58		32	132	40		15.8	58	
44	73		15	258	20.4	3.8		61.8	
45	42		49	165	32		22	39.8	
46	60	1	18	Level.				39.8	Stewiacke Bridge.
47	49		69	165	32	27.6		67.4	
47	63		14	330	16	2.8		70.2	
48	39		56	146.6	36.1	25.2		95.4	
48	65		26	146.6	36.1	11.8		107.2	
49	8		23	Level.				107.2	
49	53		45	146.6	36.1	20		127.2	Pollis's Bog.
49	66		13	165	32		5.2	122	
50	1		15	202.4	26.1		4.6	117.4	
50	79		78	412.5	12.8		12.4	104.9	Brinton's Road.
51	11		12	281	18.7	2.8		107.7	
51	41		30	220	24		9	98.7	
51	67		26	220	24	7.8		106.5	
52	27		40	660	8	4		110.5	
52	71		44	165	32		17.6	92.9	
53	19		28	375	14.8	4.9		97.8	Brookfield Road.
54	39	1	20	100	52.8	66		163.8	
54	45		6	Level.				163.8	
55	6		41	165	32	16.5		180.4	Summit.
55	16		10	Level.				180.4	
55	66		50	150	35.2		22	158.4	
56	5		19	Level.				158.4	
56	46		41	132	40		20.5	137.9	
56	74		28	1320	4		1.4	136.5	
57	31		37	220	24		11.1	125.4	
57	64		33	660	8	3.3		128.7	
58	16		32	220	24		9.7	119	
58	42		26	165	32	10.4		129.4	
58	56		14	236	22.4		3.9	125.5	
59	16		40	330	16	8		133.5	
60	57	1	41	110	48		72.6	60.9	
60	79		22	330	16		4.4	56.5	
61	16		17	1100	4.8	1		57.5	Truro.
		61	16			605.4	558.3		

ABSTRACT OF GRADIENTS.

	ASCENDING.		DESCENDING.		TOTAL.	
	Miles.	Chains	Miles.	Chains	Miles.	Chains
Level					10	24
From 0 to 20 feet per mile	10	68	17	27	28	15
From 20 to 40 feet per mile	8	18	8	36	16	54
From 40 to 60 feet per mile	3	2	1	41	4	43
From 60 to 64.8 ft. per mile	1	40			1	40
	23	48	27	24	61	16

TABLE NO. 2.

TABLE OF GRADIENTS ON THE WINDSOR BRANCH.

Distance from Halifax in Miles		Length of Grade in Miles.		Inclination of Grade 1 in.	Grade in feet per Mile.	Ascent of Grade in Feet.	Descent of Grade in Feet.	Elevation abv'e Tide Water.	LOCALITY.
Ms.	Chs.	Ms.	Chs.		FEET.	FEET.	FEET.	FEET.	
13	7							126	Windsor Junction.
13	30		23	Level.				126	
14	12		62	183	28.8	22.3		148.3	
14	57		45	117.86	44.7	25.2		173.5	
15	72	1	15	110	48	57		230.5	Beaver Bank road.
16	9		17	Level.				230.5	
17	11	1	2	150	35.3	35.9		266.4	
18	1		70	Level.				266.4	
18	35		34	146.67	36		15.4	251	
18	69		34	88	60	25		276	Long Lake.
19	14		25	75	70.4	22.6		298.6	
19	33		19	73.82	71.5	17		315.6	Beaver Pond.
21	16	1	63	75	70.4	124.5		440.1	
21	27		11	Level.				440.1	Mitchell's Road.
21	68		41	146.67	36	18.5		458.6	
22	32		44	376	11.1		7.7	450.9	
22	77		45	Level.				450.9	
23	42		45	660	8	4.5		455.4	Sackville River.
24	11		49	127	41.5	25.2		480.6	
25	3		72	220	24	21.9		502.5	
25	53		50	253.84	20.8	12.9		515.4	
25	65		12	253.84	20.8	3.3		518.7	**SUMMIT.**
26	11		26	146.6	36		11.9	506.8	Uniacke Station.
26	50		39	1466.6	3.6		1.7	505.1	Uniacke's 2nd lake
26	77		27	400	13.2		4.5	500.6	
27	27		30	1466.6	3.6		1.3	499.3	
27	70		43	412.5	10.4	6.8		506.1	Third Lake.
27	79		9	733.3	7.2		0.8	505.3	
28	39		40	Level.				505.3	
29	5		46	103.1	51		29.4	475.9	
29	18		13	244.4	21.6		3.5	472.4	
29	18	16	11			422.6	76.2	472.4	

Distance from Halifax in Miles.		Length of Grade in Miles.		Inclination of Grade 1 in.	Grade in feet per Mile.	Ascent of Grade in Feet.	Descent of Grade in Feet.	Elevation above Tide Water.	LOCALITY.
Ms.	Chs.	Ms.	Chs.		FEET.	FEET.	FEET.	FEET.	
29	18					422.6	76.2	472.4	
29	48		30	825	64		24	448.4	
29	71		26	103.1	51.2		16.7	431.7	
30	23		29	200	26.4	9.6		441.3	
30	53		30	Level.				441.3	
31	12		39	137.5	36.2	18.7		460	
31	48		36	275	19.2		8.6	451.4	End of Section 3.
32	21		53	440	12	8		459.4	
32	47		26	101.51	52		16.9	442.5	
32	63		16	138.9	38		7.6	434.9	
33	13		30	88	60		22.5	412.4	
34	43	1	30	91.67	57.6		79	333.4	
34	75		32	212.9	24.8		10.1	323.3	
35	49		54	111.11	47.5		32.1	291.2	Big Bog Brook.
36	31		62	811.8	64.8		50.2	241	
36	40		9	Level.				241	
37	36		76	88	60		57	184	
37	43		7	Level.				184	End of Section 4.
37	44		1	Level.				184	
38	14		50	94.3	56		35	149	St. Croix River.
38	43		29	3084.4	1.1		0.6	148.4	
39	48	1	5	93.48	56.4		60.0	88.4	
40	8		40	3300	1.3		0.8	87.6	
40	49		41	220	24		12.2	75.4	
42	4	1	35	2538.46	2	3		78.4	Ponhook Road.
43	28	1	24	120.5	43.8		56.2	22.2	
43	72		44	Level.				22.2	Wickworth Road.
44	56		64	Level.				22.2	Windsor.
44	56	31	49			461.9	565.7	22.2	

ABSTRACT OF GRADIENTS.

	ASCENDING.		DESCENDING.		TOTAL.	
	Miles.	Chains	Miles.	Chains	Miles.	Chains
Level					4	41
From 0 to 20 feet per mile	3	16	3	14	6	30
From 20 to 40 feet per mile	4	67	2	2	6	69
From 40 to 60 feet per mile	2	63	7	47	10	30
From 60 to 71¼ ft. per mile	2	27	1	12	3	39
	13	13	13	75	31	49

TABLE No. 3.

TABLE OF CURVES ON MAIN LINE FROM HALIFAX TO TRURO.

Distance from Halifax.		Length of Straight Line.	LENGTH OF EACH CLASS OF CURVE.						Whole No. of Degrees of Curve.	LOCALITY.
			80 chs. radius and upwrd.	80 chs. to 60 chs. radius	60 chs. to 40 chs. radius	40 chs. to 30 chs. radius	30 chs. to 20 chs. radius	20 chs. to 12 chs. radius		
Ms.	Chs.	Chains.	Chains	Chains	Chains	Chains	Chains	Chains		
	10							10	41	Halifax Station.
	29						19		53	
	36	7								
	46						10		28	
	53						7		21	
	69	16								
1	6						17		49	
1	11	5								
1	22						11		30	
1	30	8								
1	38						8		23	
1	54	16								
1	71						17		49	
1	78	7								
2	10						12		34	
2	17	7								
2	33						16		46	
2	47	14								
2	57		10						4	
3	31	54								
3	36					5			3	
3	54	17								
3	73						19		54	
3	77	4								
4	6						9		26	
4	14						8		24	
4	40							26	123	Birch Cove.
4	58						18		52	
4	72	14								
4	74		2						1	
5	10	17								
5	16						6		16	
5	40	24								
5	45						5		11	
5	55	11								
5	61						5		11	
5	66	5								
5	68						2		6	
5	74	6								
6	2						8		24	
6	6	4								
6	24						18		52	
6	45	21								
6	76						31		46	
7	39	43								
7	54					15			28	
7	66			12					11	
7	75	9								
8	23				28				20	Bedford Station.
8	62			39					37	

Distance from Halifax.		Length of Straight Line.	LENGTH OF EACH CLASS OF CURVE.						Whole No. of Degrees of Curve.	LOCALITY.
			80 chs. radius and upwrd.	80 chs. to 60 chs. radius	60 chs. to 40 chs. radius	40 chs. to 30 chs. radius	30 chs. to 20 chs. radius	20 chs. to 12 chs. radius		
Ms.	Chs.	Chains.	Chains	Chains	Chains	Chains	Chains	Chains		
9	33	51								
9	40			7					8	Lily Lake.
10	41	81								
10	73					32			61	
11	12	19								
11	24				12				17	
11	42	18								
11	58			16					15	
11	61	3								
11	70			9					8	
12	5	15								
12	59		54						35	
13	15	36								Windsor Junction.
13	55				40				57	
14	1	26								
14	31				30				43	
14	51	20								
14	61			10					9	
14	75	14								
15	6			11					10	
15	27	21								
15	50		23						17	
16	12	42								
16	41				29				43	
16	46	5								
16	58				12				17	
16	72	14								
17	8			16					15	
17	42	34								
17	78					36			68	
19		82								
19	11					11			21	
19	57	46								Fletcher's Station.
20	20				43				61	
20	50		30						21	
20	59	9								
21	3				24				34	
21	34					31			59	
21	44				10				14	
21	59	15								
22	10					31			59	
22	21				11				15	
22	26	5								Grand Lake Station.
22	45					19			36	
22	56	11								
22	67					11			21	
23	15	28								
23	26				11				15	
23	59	33								
24	1					22			42	
24	32	31								
24	38			6					8	

Distance from Halifax.		Length of Straight Line.	LENGTH OF EACH CLASS OF CURVE.						Whole No. of Degrees of Curve.	LOCALITY.
			80 chs. radius and upwrd.	80 chs. to 60 chs. radius	60 chs. to 40 chs. radius	40 chs. to 30 chs. radius	30 chs. to 20 chs. radius	20 chs. to 12 chs. radius		
Ms.	Chs.	Chains.	Chains	Chains	Chains	Chains	Chains	Chains		
25	25	67								
25	49		24						8	
25	62	13								
26	4				22				31	
26	30	26								Shubenacadie River.
26	49		19						14	
26	67	18								
27	8				21				31	
28	51	123								
28	69		18						13	Elmsdale.
32	69	320								
33	11				22				31	
34	40	109								
34	48		8						5	
35	56	88								
36	13					37			72	
36	18	5								
36	58					40			76	
36	78	20								
37	13				15				21	
38	72	139								
39	11		19						13	Shubenacadie River.
41	13	162								
41	25		12						7	
42	71	126								
43	30		39						14	
44	10	60								
44	30		20						8	
44	71	41								
45	39		48						15	Stewiacke River.
46	36	77								
46	67				31				44	
47	62	75								
48	10				28				40	
48	53	43								
49	15				42				60	Pollis's Bog.
49	16	1								
49	67				51				75	
49	72	5								
50	12				20				29	
51	12	80								
51	23				11				15	
51	41	18								
52					39				55	Brookfield Road.
53	54	134								
54	1		27						19	
54	11	10								
54	28		17						14	
55	65	117								
56	11		26						7	
59	36	265								
61	2		126						71	
61	16	14								Truro.
		3122	522	120	560	290	246	36	2536	

Length of Straight Line	39 miles	2 chains.
Length of Curved Line	22 "	14 "
	61 miles	16 chains.

Total curvature, 2536 degrees. Average curvature per mile, 41 degrees.

TABLE No. 4.

TABLE OF CURVES ON WINDSOR BRANCH.

Distance from Halifax.		Length of Straight Line.	LENGTH OF EACH CLASS OF CURVE.						Whole No. of Degrees of Curve.	LOCALITY.
			80 chs. radius and upwrd.	80 chs. to 60 chs. radius	60 chs. to 40 chs. radius	40 chs. to 30 chs. radius	30 chs. to 20 chs. radius	20 chs. to 12 chs. radius		
Ms.	Chs.	Chains.	Chains	Chains	Chains	Chains	Chains	Chains		
13	7									Junction with Main [line.
13	38						31		90	
13	45	7								
13	69						24		68	
14	75	86								
15	13				18				25	
15	41	28								
15	73						32		69	Beaver Bank Road.
16	63	70								
16	78				15				21	
17	14	16								
17	26				12				17	
18	4	58								
18	17						13		29	
18	45	28								
18	61						16		36	
18	64	3								
18	79						15		32	Long Lake.
19	33	34								
19	52						19		37	
20	6	34								
20	24				18				25	
20	43	19								
20	72		29						14	
22	10	98								
22	46		36						25	
22	54	8								
22	68				14				20	
23	50	62								Sackville River.
23	61				11				15	
24	35	54								
24	58				23				33	
24	75	17								
25	5				10				15	
25	51	46								
25	65		14						10	near Uniacke Station.
26	32	47								
26	44				12				17	
26	53	9								
27	27				54				62	
27	47						20		46	
27	69	22								near Third Lake.
28	9				20				14	
28	25	16								
28	37		12						8	
29	18	61								
29	45		27						19	
29	63				18				26	

Distance from Halifax.		Length of Straight Line.	LENGTH OF EACH CLASS OF CURVE.						Whole No. of Degrees of Curve.	LOCALITY.
			80 chs. radius and upwrd.	80 chs. to 60 chs. radius	60 chs. to 40 chs. radius	40 chs. to 30 chs. radius	30 chs. to 20 chs. radius	20 chs. to 12 chs. radius		
Ms.	Chs.	Chains.	Chains	Chains	Chains	Chains	Chains	Chains		
30	28	40							5	
30	29		6							
30	54	25							39	
31	1		27							
31	2	1							49	
31	36				34					
32	21	65							47	
32	54				33					
33	4	30							18	
33	17				13				47	
33	50				33					
33	78	28							20	
34	12				14					
34	17	5							54	
34	46					29				
34	56	10							64	
34	84						28		65	Big Bog Brook.
35	33						29			
35	77	44							30	
36	18					21				
36	47	29							59	
36	79					32				
37	24	25							60	St. Croix River.
37	56					32				
38	43	67							30	
39	28		65							
40	5	57							14	
40	20			15						
40	74	54							43	
41	24				30					
41	46	22							13	
41	60			14						
42	21	41							65	
42	50						29		85	
43	8						38			
43	72	64								
44	24	32							55	
44	48							24		Windsor.
44	56	8								
		1470	216	29	382	114	294	24	1635	

Length of Straight Line	18 miles	30 chains.
Length of Curved Line	13 "	19 "
	31 miles	49 chains.

Total Curvature, 1635 degrees.
Average Curvature per mile, 51½ degrees.

TABLE No. 5.

STATEMENT SHOWING THE LOCATION, DIMENSIONS, AND OTHER PARTICULARS, RELATIVE TO THE STATION BUILDINGS AND FIXTURES ALREADY BUILT OR UNDER CONTRACT.

Location.	Character.	Materials.	Dimensions	Remarks.
Richmond	Station House.	Wood.	ft. 185 x 32	
"	" "projections	"	3 x 30 x 20	
"	Store House.	"	70 x 33	
"	Engine House.	Stone.	204 x 48	Contract price £1574.
"	do.	Wood.	50 x 20	Temporary.
"	Work Shop.	"	75 x 46	
"	Stable.	"	55 x 17	
"	Turntable.	"	42 ft. dia.	
"	Two Dwelling houses	"		
Bedford	Passenger House.	"	40 x 14	
"	Freight House.	"	65 x 20	
"	Dwelling House.	"	30 x 25	
Fletcher's	Station House.	"	30 x 20	
Grand Lake......	Station House.	"	60 x 22	
Elmsdale	Station House.	"	40 x 25	Contract price £265.
Windsor	Station House.	"	200 x 84	
"	Engine House.	"	150 x 20	
"	Turntable.	Iron & w'd	50 ft. dia.	
Mount Uniacke...	Station House.	Wood.	40 x 25	Contract price £249.

MACHINERY AND FIXTURES AT RICHMOND STATION.

Two Turntables 50 feet diameter.
One 16 horse horizontal high pressure Engine.
" 5 horse do. do. do.
" small high pressure Engine, for pumping water.
" large Turning Lathe, for turning locomotive wheels.
" pair wheel Turning Lathes 24 inch head.
" Planing Machine to plane 15 ft. or cy. faces.
" Shaping Machine.
" Radial Drilling Machine, radius from 20 inch to 4 feet.
" Screw cutting Lathe.
" Vertical do.
" Circular Saw Machine.
" Patent Brick Machine.

TABLE No. 6.

STATEMENT OF CONTRACTS FOR FENCING.

Section of Road.	Contractor's Name.	Length of Fencing contracted for.		Price. per Rod.	Amount of Contract.			Amount Paid.		
		Rods.	Feet.							
1	William Turnbull..........	165	4	7s.	£ 57	16	9	£57	16	9.
1 & 2	Daniel McPherson, £3 10s. for extra work	38	5	16s. 6d.	40	7	4	40	7	4
	Andrew Hiffler............	71	15	7s.	25	8	9	25	3	9
	William Turnbull..........	1996		7s.	698	12	0	678	12	0
	Johnston & Dimock........	628		5s. 8d.	177	18	8	177	18	8
	Thomas Woodworth........	101		5s. 8d.	28	12	4	28	12	4

Section of Road.	Contractor's Name.	Length of Fencing contracted for.		Price per Rod.	Amount of Contract.			Amount Paid.		
		Rods.	Feet.							
3	James Fraser	1086		6s. 6d.	352	19	0	352	19	0
	Forbes Black	213		5s.	53	5	0	53	5	0
5	Black, McDonald, & Irons ...	2560		5s.	640	0	0	144	0	0
6	Herbert Harris	1458		6s. 3d.	455	12	6	422	15	0
	Ditto	91		13s. 9d.	62	11	3	62	11	3
7	John and Edward Fisher....	160		5s. 8½d.	45	13	4	45	13	4
	Ditto	176		5s. 8½d.	50	4	8	50	4	8
	James Fraser. ....about	1336		6s. 3d.	407	10	0	176	0	0
	S. Sutherland & Sons	1518		5s. 11½d.	451	17	6	260	0	0
8	Thomas H. Gibbs.....about	4664		6s. 6d.	1515	16	0	1022	0	0
9	S. Sutherland & Sons.......	2887	5	5s. 11½d.	860	3	4	150	0	0
10	S. Sutherland & Sons.......	5584		5s. 11½d.	1663	11	4	20	0	0
11	Walker & Co.	5320		6s. 5d.	1706	16	8	60	0	0
Windsor	Branch.									
1	John J. Turnbull	2000		5s. 6d.	577	10	0	88	0	0
5	Johnston, O'Brien & Creighton	4720		6s. 3d.	1475	0	0	1065	0	0
	Sundry small charges.........	....		....	63	11	4	63	11	4
		36756	5		£11410	12	9	5044	10	5

TABLE No. 7.

STATEMENT OF THE NUMBER OF LOCOMOTIVES IN USE ON THE NOVA SCOTIA RAILWAY.

Giving the weight of each, the capacity of the tender, diameter and stroke of the cylinder, connection, number and diameter of drivers, with the names of the builders.

No. and Name of Engine.	Use.	Weights with Wood and Water.			Capacity of Tenders.	Cylinders.		Connections.	Drivers.		Name of Builder.
		Engine	on Drivers	Tenders.		Dia.	Stroke		No.	Dia.	
		Tns	Tons.	Tons.	Gals.	inchs	inches.			feet.	
1. Mayflower..	Pas. & F	19	..12..	13..	1500..	15	20..	inside.	4	5	Matfield Manf. Co.
2. Sir Gaspard.	do.	15½	...7...	.0..	..461..	12	18..	outside	2	5	Neilson & Co., Glasgow.
3. Joseph Howe	do.	15½	...7...	.0..	..461..	12	18..	"	2	5	
4. Tank Engine	Ballast	.9	...9...	.0..	..410..	10	16..	"	4	3½	do.
5. " " ...	& repr's	.9	...9...	.0..	..410..	10	16..	"	4	3½	do.
6. New	Pas. & F	25	..15..	14..	1600:	16	21..	"	4	5	do.
7. "	do.	25	..15..	14..	1600..	16	21..	"	4	5	do.

Table No. 8.

OFFICERS AND EMPLOYEES OF THE NOVA SCOTIA RAILWAY.

Names.	Office.	Compensation.	
	Commissioners.		
James McNab	Chairman	£700	per annum.
William Pryor, Jr.	Commissioner	£200	" "
John H. Anderson	"	£200	" "
John Morrow	Accountant	£300	" "
Thomas Foote	Clerk	£150	" "
William Buckley	Office keeper and Messenger.	£60	" "
	Engineers.		
James R. Forman	Chief Engineer	£750	Stg. per annum.
J. R. Mosse	Engineer	£450	Cy. " "
William Smellie	"	£250	" " "
Five Pupils	" in all £260 or £52 ea. per annum, and 5s. per day when employed measuring work, &c., on the road.		
	Superintendents and Foremen on Road.		
William Marshall	"	14s.	per day.
C. E. Hewitt	"	12s.	" "
[illegible]n Adams	"	10s.	" "
E. Lemont	"	10s.	" "
J. Hanright	"	10s.	" "
Charles Creed	"	10s.	" "
F. W. Fishwick	Time Keeper	10s.	" "
J. Alexander	"	7s. 6d.	" "
A. Moir	Supertnt. of Locomotives, &c.	£320	per annum.
J. Johnston	"	11s. 3d.	per day.
John Murray	Guard & Conductor	10s.	" "
James Hunt	"	7s. 6d.	" "
	Station Agents.		
William Coghill	Halifax	£120	per annum.
Thomas O'Connor	Bedford	5s.	per day, and House.
G. P. Boggs	Grand Lake	7s. 6d.	per day.
W. Shea	Elmsdale	£100	per annum.
William Boyd	Engine Driver	10s.	per day.
George Cleland	"	10s.	" "
J. McLellan	"	10s.	" "
George Malcolm	"	8s. 9d.	" "
Daniel Ferguson	"	10s.	" "
A. Cameron	Fireman	6s. 3d.	" "
S. Cameron	"	5s. 6d.	" "
A. Deal	"	5s. 6d.	" "
William Stocks	"	6s. 3d.	" "
James Cochran	"	5s.	" "
John McFarlane	"	5s.	" "
Peter McCarron	Breaksman	6s. 3d.	" "
M. McDonald	"	5s. 6d.	" "
D. Jacobs	"	5s.	" "
William Davis	Machinist	10s.	" "
F. Creamer	"	7s.	" "
J. Hopgood	"	6s. 6d.	" "

Names.	Office.	Compensation.	
R. Dunn	Machinest	6s.	per day.
George Clark	"	8s.	" "
S. Smedley	"	5s. 6d.	" "
R. Ritchie	"	7s. 6d.	" "
John Gower	"	8s.	" "
A. McAlpin	"	7s.	" "
D. Day	"	6s.	" "
W. Moir, (Boy)	"	2s.	" "
William Malcolm	Blacksmith	7s. 6d.	" "
J. Hurshman	"	7s.	" "
C. Pollard	"	7s.	" "
R. Rutherford	"	7s.	" "
E. Barrey	"	5s.	" "
W. Sinclair	"	4s. 6d.	" "
E. Tobin	"	4s. 6d.	" "
M. Tobin	"	4s. 6d.	" "
J. Ward	Carpenter	7s. 6d.	" "
D. Ward	"	5s. 6d.	" "
James Ham	"	5s. 6d.	" "
John McCarron	Watchman	5s.	" "
A. Kennedy	Laborer	6s. 3d.	" " Employed wooding and watering on the road.
4 Laborers	"	5s.	" " " "
M. Diggens	"	6s. 3d.	" " Employ'd at Richmond loading and unloading Cars, &c.
6 Men	"	average 4s. 8d. ea.	
Abraham Feetham	Upholding	10s.	per day.
10 Men	"	each 6s. 3d.	" "
16 do	"	" 5s.	" "
3 do	"	" 4s. 6d.	" "

There are also Twelve Laborers temporily employed about the Depôt at Richmond at various works.

The Cars are built by contract—the Board furnishing all materials. Some of the Blacksmiths are employed in making the iron work for them.

TABLE No. 9.

COMPARATIVE STATEMENT SHOWING THE AVERAGE COST PER MILE OF THE NOVA SCOTIA RAILWAY, AND OF THE RAILWAYS OF THE STATE OF NEW YORK.

	AVERAGE COST PER MILE.	
	NOVA SCOTIA RAILWAY 92$\frac{8}{10}$ miles, including 5$\frac{9}{10}$ miles of Double Track and Sidings.	NEW YORK RAILWAYS, 2617 miles, including 570 miles of Double Track and Sidings.
Grading, Masonry, and Bridging	£5086 8 3	£3614 15 4
Superstructure, including Iron	2898 1 8	3299 5 0
Station Buildings and Fixtures	435 2 2	557 7 6
Locomotive Engines and Cars	1113 1 1	1521 6 6
Land, Land Damages, and Fences	167 17 8	1106 15 0
Engineering and Salaries	356 11 11	409 10 0
Other items not included in the above	986 13 7	2189 5 0
	£11,043 16 4	£12,698 4 4